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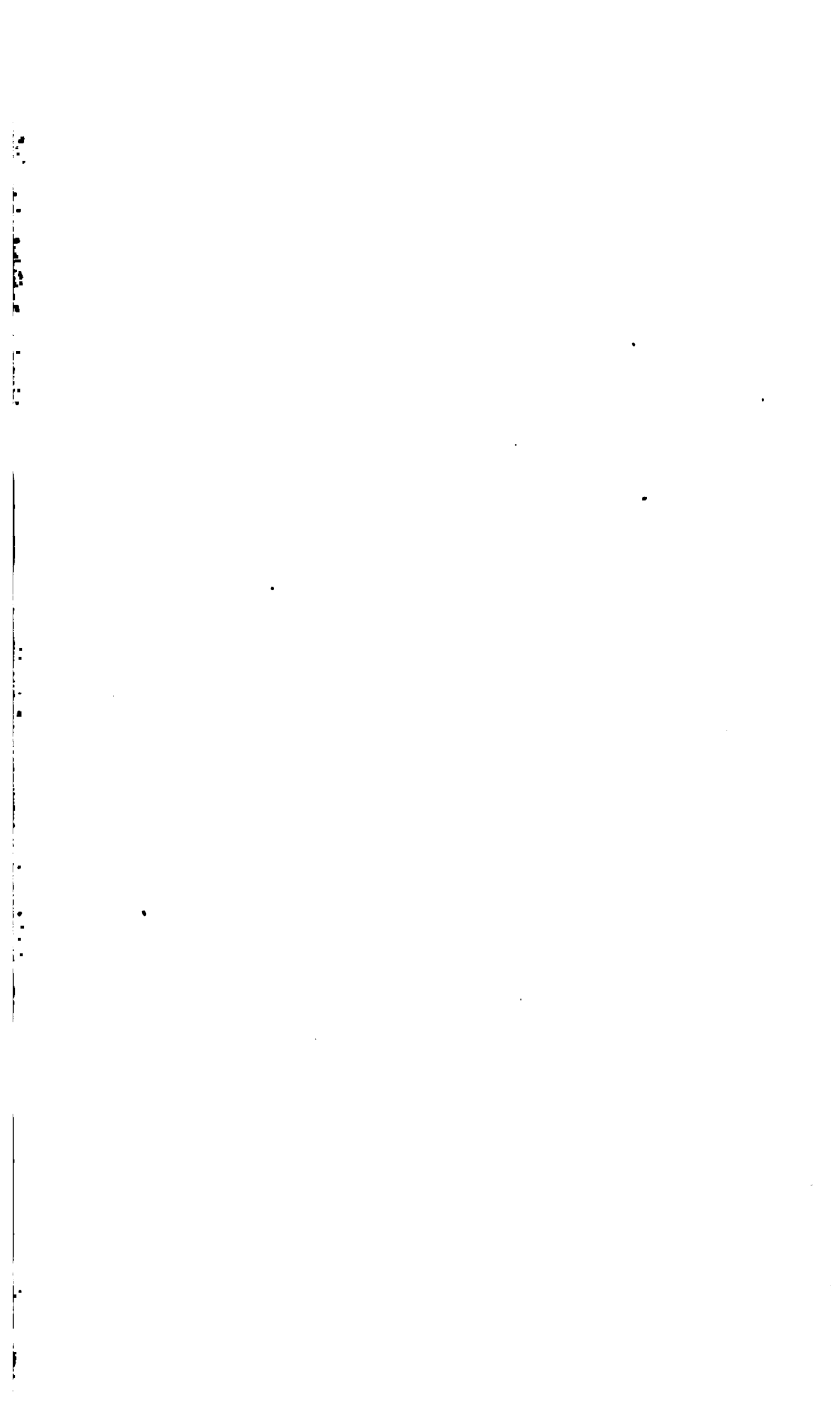
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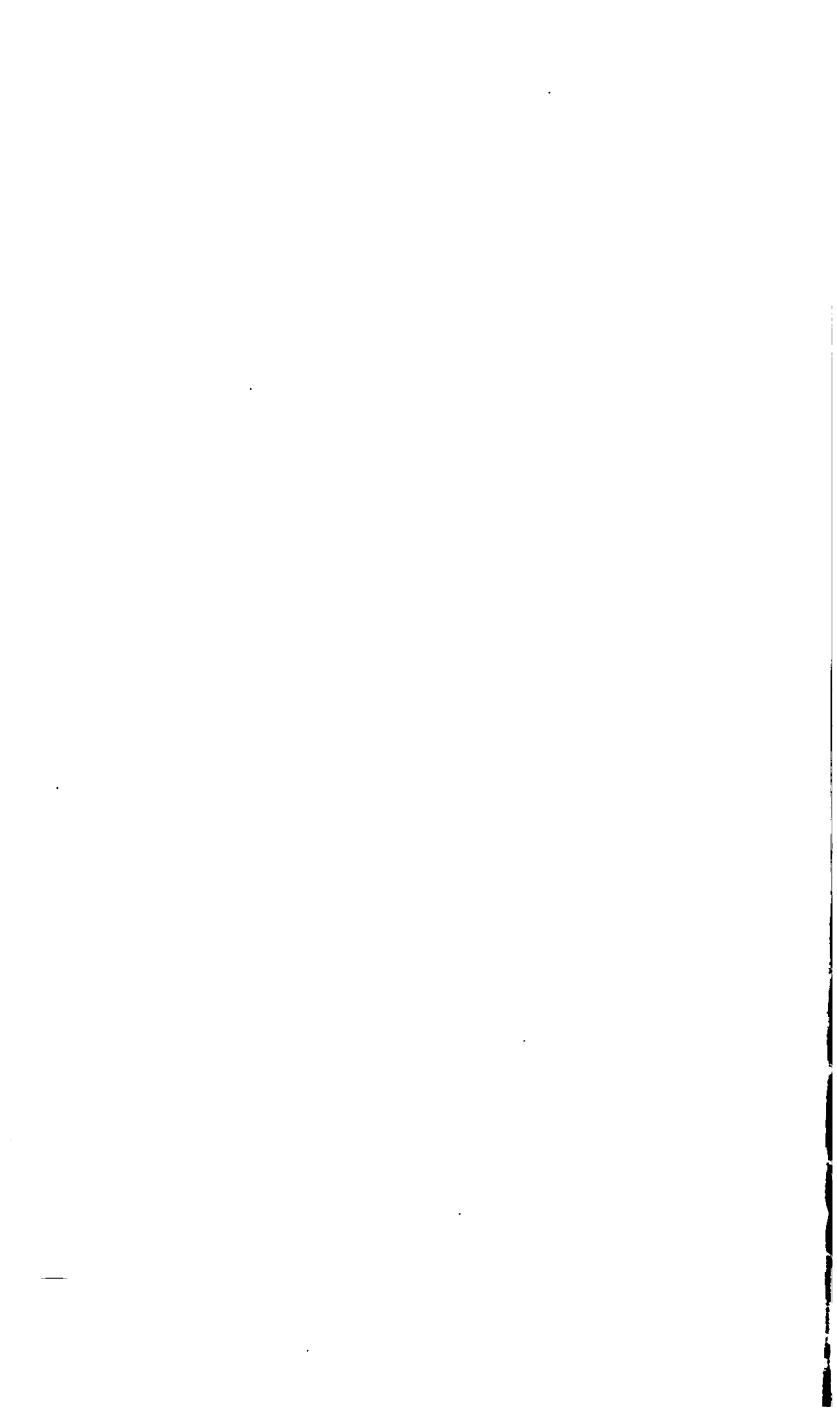
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Prof Daniel C Gorman
with regards of
W S Gorman

New York 25 April 1870.

THE
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IN
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mar.

CHRISTIANUM ORGANUM.

OR

THE INDUCTIVE METHOD IN SCRIPTURE AND SCIENCE.

BY

JOSIAH MILLER, M.A.

AUTHOR OF 'SINGERS AND SONGS OF THE CHURCH' ETC.

WITH AN INTRODUCTION

BY

JOHN HALL GLADSTONE, Esq., Ph.D., F.R.S.

'Thy creatures have been my books, but thy Scriptures
much more.'

LORD BACON.



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INTRODUCTION.

TWO BOOKS have long been my study—the volume of Nature, and that collection of writings which Christians look upon as containing a revelation from God. It has also been my habit to converse freely with the interpreters of either book; and thus have arisen in my mind two convictions, which further experience only strengthens. The first is, that the methods of interpretation employed by scientific men are, generally speaking, better suited for the discovery of truth than the methods adopted by theologians. The second is, that those who are conversant with scientific method, and at the same time are in sympathy with the Christian ideas, can render good service by drawing attention to the paramount importance of the Inductive process of reasoning.

These opinions I have not hesitated to express in various ways, and I have often found them shared by others. So, when Mr. Josiah Miller told me that he had written a treatise on the subject, I readily listened to his request that I should write an Introduction.

Without endorsing every sentiment in his little book, I ask for it an attentive perusal by both classes of students—those who investigate Nature, and those who search the Scriptures. If it be true, as he contends, that the basis of the Inductive Method is essentially Christian, it will afford some explanation of the fact that so large a proportion of the leading scientific men, both of past ages and of the present day, have been, or are, sincere believers in Christ; and it gives an additional reason why those who would become natural philosophers should not be unmindful to cultivate the spiritual part of their nature: while, on the other hand, if it be true that the methods which have been employed with such success in physical enquiries have as yet been rarely applied to the settlement of religious questions, if submission to human authority is still in the ascendant, if

theological doctrines are supported by isolated texts instead of being carefully drawn from the whole testimony of Scripture, and if these faulty methods are indeed the fruitful parent of conflicting systems, then it becomes every professed theologian—ay, every conscientious teacher of religion—to welcome the aid which the experience of Science may render.

At first sight it may seem an arrogant thing for the natural philosophers, whose triumphs are so recent, to claim intellectual superiority over the divines who have been accumulating knowledge during so many centuries; but it is this very youth of Science which gives it the advantage. The natural philosophy of classic times and of the Middle Ages was so worthless that during the great revival of letters it was swept away as rubbish, and in its place has been erected the majestic, many-chambered temple of modern science. But the theological systems of the Fathers and the Schoolmen had a larger share of truth about them, and had so entwined themselves with the best affections and hopes of men that they were not easily overthrown, and, instead of a clearance and

reconstruction, the world of religious thought underwent a slow and incomplete reformation.

Nor have other causes been wanting. The sanctity which attaches to the Sacred Writings themselves is apt to be extended to the words of the expositor, and men who would never have hesitated to denounce an astrologer or an alchemist have considered it little else than sacrilege to point out the blunders of a reverend teacher. Thus the very respect paid to the things of religion has tended to stereotype error.

Again, the conclusions of natural science are more readily brought to the test of experiment than theological doctrines. It is true that Christian experience and ecclesiastical history afford means of verifying many of the deductions of divines; but the proof is slower, and usually less certain, than those observations which at every turn test the theories of the philosopher.

Furthermore, the facts and the applications of physical science do not appeal so powerfully to the feelings and aspirations of the mass of mankind: hence the methods of arriving at

truth can be more calmly studied in that region than in the domain of our holiest impressions since childhood, our profoundest beliefs, and our eternal interests.

J. H. GLADSTONE.

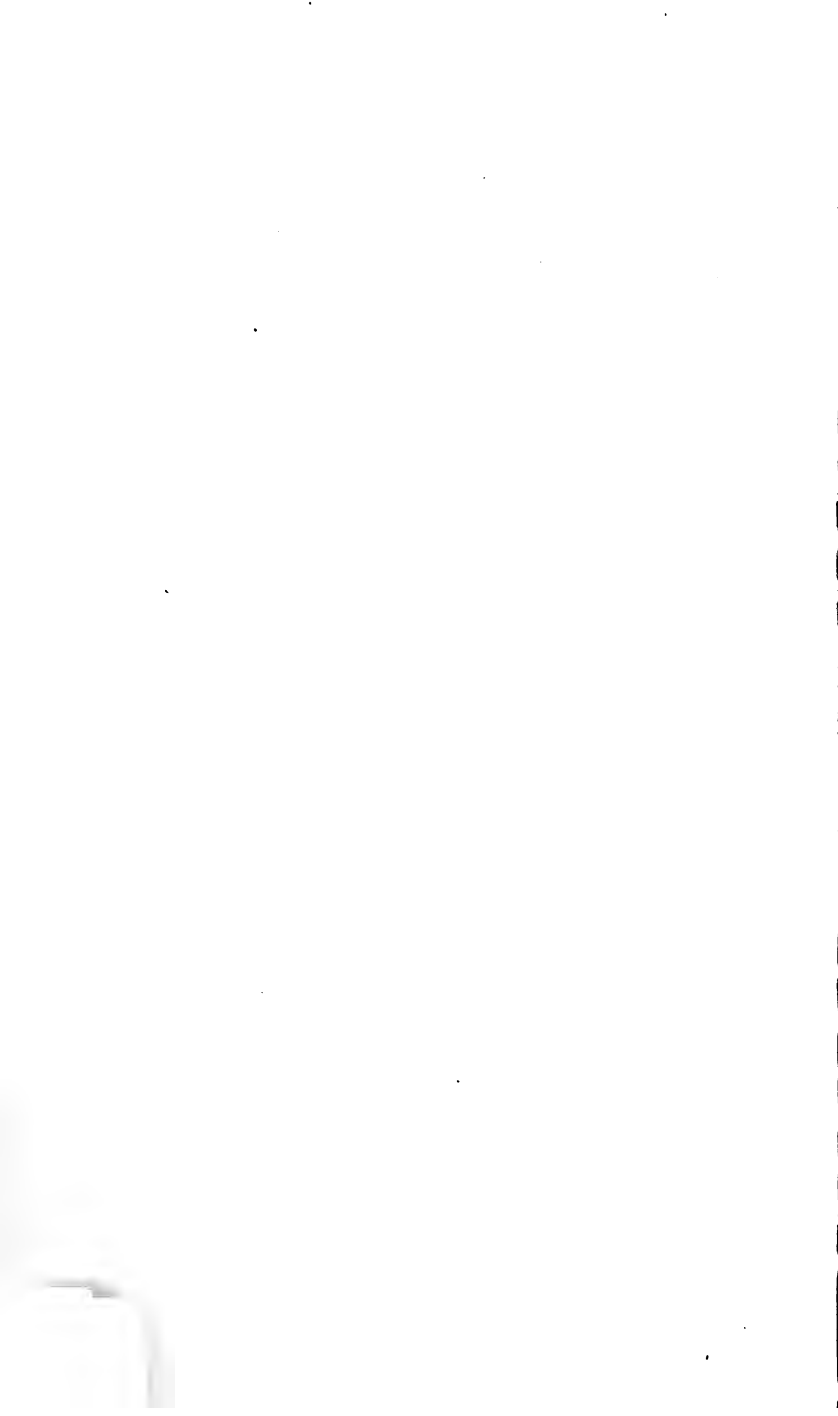
PREFATORY NOTE.

THIS TREATISE is not to be regarded as an attempt to write exhaustively on a theme that is very broad, and has many ramifications; it does not claim to be more than a contribution to the treatment of a subject which the author hopes will engage other and abler pens. It has been a matter of surprise to him that he has been unable to find in the literature of any country any work specially devoted to the subject of the Christian basis of the Inductive Method, and the application of that method to the Scriptures. But he has been glad to find that not a few powerful thinkers have long been ruminating upon it. To one of these, a much-esteemed friend, who wishes for the present to be nameless, he is indebted for the

germal ideas of this treatise, especially as unfolded in chapters iv. and v. It is due to that friend to add that he is not in any way responsible for the form, expression, and manner of illustration here employed, and that he will not be prevented by the appearance of this pioneer volume from giving, when health and opportunity permit, his own ideas, in the language and with the completeness of view that have resulted from many years of meditation upon this favourite theme. One more prefatory word is also necessary. The author has some fear lest there should be, on the part of some readers, a misapprehension as to the aim of this treatise. Because of its argumentative form, it might be supposed to be nothing more than a dialectic exercise, an attempt to give one metaphysical theory an advantage over others, without regard to the spiritual life of the ordinary man. But so far from this being its object, its aim is in the highest degree practical; and it gives expression to a method of enquiry in Scripture and Science the apprehension of which made an era in the life of the author, and has been of unspeakable benefit to

him ever since. Such priceless benefits he desires to offer to all, and especially to those of the thoughtful who, being tossed on the sea of life, are asking for anchorage and rest.

Newark, 1870.



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CHRISTIANUM ORGANUM.

CHAPTER I.

THE INDUCTIVE METHOD—WHAT IT IS.

THE inductive method in its application to physical science has in modern times received a large share of attention, and has repaid the labour and genius devoted to it with results that are appreciable to all. Having at length learned the true method, and caught the spirit of that method, man is continually extending his dominion over the forces of nature, enlarging the boundaries of his discoveries, and improving the arts of life. But although this method, which nature itself teaches, has been employed with such happy consequences in the domain of natural science, the objects presented to us in revealed religion have not yet been fully and systematically brought under its operation. To what work can we point, whether it be classed as scientific or religious, in which we

see traced for us the manner of the application of induction to the facts of Scripture, and the advantages likely to flow from that course? We know of no such work. The theologian has been too ready to leave the method to that department of knowledge in which it has been most successfully applied, and the man of science has been so much engrossed with his splendid discoveries in the ever-widening fields of physical enquiry, as to have no time or energy to devote to the application of the same method in the more important region of religious truth, where still greater discoveries and rewards might be expected.

But it may be affirmed that it is not on account of neglect that the inductive method has not been systematically applied to the truths of revelation, but for well-ascertained reasons, that will take the form of objections to our course of argument, which is designed to show the advantages of such an application. We shall endeavour to remove these preliminary objections.

It may be objected that the ablest exponents of the inductive method differ as to its precise nature, and that it must be regarded as a valuable instrument we are at present only learning to employ, and that it would be wise to wait till our mastery of it is greater. To

this objection we reply that, used with our present imperfect knowledge and skill, this instrument has proved of the greatest service in the promotion of physical science. This will be readily admitted without adducing the illustrative proofs. And, further, we reply that the great leaders of modern philosophical thought, though looking at this method from different points of view, and taking different sides in the controversies concerning it, according to the schools of philosophy to which they severally belong, yet are substantially agreed in regard to its principal features and elements.

Every exponent of the inductive method will acknowledge that in any argument in that method there are three principal elements that must be present, and may reasonably be the subjects of separate consideration—first, the mind, with its native tendencies and its acquired habits of operation; secondly, the object or objects, whether material or mental, that are the occasion of the mental operation—the action of induction; and, thirdly, the larger conclusion reached, in which the reward of the process is obtained—that conclusion being greater than the premises can be said to actually ascertain, being a general and sometimes a universal conclusion, and in many instances the starting-point for some wider generalisation; the conclusion being

justified to us by that remarkable tendency of the mind to regard as general what is only proved in a number of instances—a tendency that may sometimes mislead, but which has been, as a matter of fact, the source of many of our most valuable and remarkable discoveries. It was not by the possession of some special faculty denied to other men that Sir Isaac Newton arrived at the firm conviction of the universality of the law of gravitation. The ascertainable facts of nature were before him; he was familiar with the actual discoveries and far-reaching suggestions of previous astronomers; and he was prepared to give a mind free from the distractions either of prejudice or worldly ambition, and full of childlike docility, to the contemplation of physical phenomena. Some simple incident—it is said the falling of an apple—was sufficient to be the occasion of his rising to the full reception of his magnificent discovery. He could not penetrate to the depths of the earth, nor at that time apply his principle to the double stars in the distant heavens; but, having learned the mathematical law of gravitation, from enquiry within a narrow range, that the force is inversely proportional to the square of the distances, he felt sure at once that in the depths below or in the heights above the same law would be found to hold good.

Owing to the imperfection of the instruments, and the vastness of the distances to be measured, and the variety of forces colliding or combining that had to be accounted for, there was a long delay in completing the corroborative experiments, and sometimes the far-reaching law seemed to be threatened by an inharmonious and insoluble fact. But experience has shown, as Newton's law has been affirmed by discovery after discovery, that when experiments become as accurate in their data as the processes of the mind are reliable in their principle, the experiments and the mental processes confirm each other and agree in a common conclusion.

To show that there is a general acknowledgment on the part of opposing philosophers of what are the principal elements of inductive argument or enquiry, and at the same time to state the method more fully, we shall quote their own words. The late Dr. Whewell, in the preface to his '*History of the Inductive Sciences*' (1837), speaks of 'the processes of collecting general truths from assemblages of special facts, and of ascending from propositions of a limited to those of a larger generality,' as that which 'the term induction peculiarly implies,' and in his '*Novum Organon Renovatum*' (third edition, 1858), p. 71, Aphorism xv. is as follows:—

'An induction is not the mere sum of the

facts which are colligated. The facts are not only brought together, but seen in a new point of view. A new mental element is superinduced; and a peculiar constitution and discipline of mind are requisite, in order to make this induction.' Sir John Herschel, in his most able review of Whewell's 'History of the Inductive Sciences,' given in the 'Quarterly Review,' vol. lxxiii., No. 135, while disavowing the mental philosophy of Whewell, which had led him to speak of 'a new conception being superinduced upon the facts' in induction, thus gives his own view of the method. We give some brief extracts of the most salient points. He says, 'We construct general propositions themselves from the contemplation of particulars, and attribute to them a universality, which experience alone is incapable of warranting.' And again, 'Urged by a powerful and ready impulse, of which we can give no account but that it is so, we assume a continuity where we find none.'

John Stuart Mill, in 'A System of Logic' (4th edition, vol. i. p. 310,) says, 'For the purposes of the present enquiry, induction may be defined, the operation of discovering and proving general propositions. It is true that (as already shown) the process of indirectly ascertaining individual facts is as truly inductive as that by

which we establish general truths. But it is not a different kind of induction ; it is a form of the very same process ; since, on the one hand, generals are but collections of particulars, definite in kind, but indefinite in number ; and, on the other hand, whenever the evidence which we derive from observation of known cases justifies us in drawing an inference respecting even one unknown case, we should, on the same evidence, be justified in drawing a similar inference with respect to a whole class of cases. The inference either does not hold at all, or it holds in all cases of a certain description—in all cases which, in certain definable respects, resemble those we have observed.’ And he says at p. 315 of the same work, ‘Induction, then, is that operation of the mind by which we infer that what we know to be true in a particular case or cases will be true in all cases which resemble the former in certain assignable respects.’

And Dr. James M‘Cosh, in his work, ‘An Examination of Mr. John Stuart Mill’s Philosophy, being a defence of fundamental truth’ (1866), although approaching the question of induction from an entirely different philosophical standpoint, and combating many of Mr. Mill’s positions, yet so writes as to show what we are now endeavouring to prove—that there

is a substantial agreement on the part of opposing philosophers as to what are the principal elements in true induction. At pages 344-5 of the work just referred to he says, 'We gather the facts and tabulate them, and, without "anticipating" nature, we allow the facts to suggest the law, which is accepted only when it embraces and explains all the facts. But, as science advances, by this method we reach laws which may be regarded as at least provisionally established, and we enquire—in certain departments with the powerful aid of mathematics—what consequences would follow from these laws? Another and a very powerful method now becomes applicable. I call it the joint inductive and deductive, in which we enquire what results must follow from certain supposed laws, and then compare these with facts got by observation or experiment. In all our advanced sciences this must now be the principal mode of investigation.'

But there is another objection to the investigation of the question of the application of the inductive method to Scripture, of an entirely different kind, which it will be necessary to remove before we proceed. It may be objected that the investigation is unnecessary, because the method being implanted in nature, people have

universally employed it, though without giving attention to the method. This objection was made by the late Lord Macaulay, in his essay on Bacon, when he affirmed that he ‘only told men to do what they were all doing.’

Our reply to this objection is twofold. Even if we admit that nature teaches us the inductive method, so that even a savage would employ it, yet we affirm that it may be true, and we believe it is true, that, through not having sufficiently considered the nature and value of this method, men have not been adequately impressed with its claims, and have often in the most important matters of life, in the pursuit of scientific and religious truth, departed from it, to their serious disadvantage, and have yielded unintelligently to the assumptions of human authority, and the pretensions of unenlightened antiquity. And, again, the method may be true, and carry in it a natural authority, and be an important engine of discovery; yet, through not being made a subject of careful investigation, by those who nevertheless admit its claims, it may remain comparatively inefficacious, like an ingenious machine in the hands of an untrained workman.

But when objections have been removed, the question recurs, What advantages do we antici-

pate from the application of the inductive method to the Scriptures? We reply, We anticipate as the results—First, the unspeakable satisfaction to the mind of being able to rest in a true method of enquiry—one whose nature is thoroughly known, and whose claims are no longer a subject of speculation, but have become to us absolutely certain. Second, we anticipate, as a further result, the casting down of some of those idols of the mind that have too long kept men in ignorance, superstition, and fear; and the termination of much religious controversy that was fruitless, partly because it was conducted on a wrong method. And, as a third principal result, we look forward to the discovery and certification of many general truths of the highest practical value. These truths will in some instances be learned from single passages of Scripture, but they will outweigh in worth and authority the dogmas of tradition, which, originating in superstition and passing unchallenged through many hands, are, notwithstanding their high antiquity, false and worthless as at first.

In meeting a preliminary objection, we have already stated our view of the nature of the inductive method, but there are some elements in it that require further statement and a brief discussion. The preparatory process to induc-

tion is sometimes put for induction itself, and the etymology of the word—a bringing together—fixes attention upon that preliminary element, the gathering together of particulars. But although in collecting instances new scope and stimulus may be given to the mind to rise to the induction, yet the process of collecting is no part of the induction itself. The colligation of similar instances is to be regarded rather as a subsequent verification, to assure us that we have not been misled by an exceptional case.

As our experiments cannot be universal, and we cannot actually arrive at universal facts, so the multiplication of experiments never strengthens our impression of the correctness of the inductive conviction and the universality of the inductive result. If we are burned by fire, we immediately infer universally that fire burns. To be burnt many times will not make us more sure of this, though it may be necessary to repeat the process to see that on the first occasion there was no mistake in our single experience, regarded as an experiment.

We venture to think that the late Archbishop Whately, in his zeal for syllogism, has undervalued induction and fallen into the error we have just been treating of, by confounding investigation with it. In his 'Logic' (book iv. c. i. § 2) he says, 'From examination of many

horned animals, as sheep, cows, &c., a naturalist finds that they have cloven feet. Now, his *skill as a naturalist* is to be shown in judging whether these animals are likely to resemble in the form of their feet all other horned animals; and it is the exercise of this judgment, together with the examination of individuals, that constitutes what is usually meant by the inductive process, which is that by which we gain what are properly *new truths*, and which is not connected with logic; being not what is strictly called reasoning, but investigation.' In opposition to this view we affirm that induction is something quite different from investigation, that it can be presented in the form of a syllogism, and that it reaches in its results beyond the narrow limits of logic, as defined by Archbishop Whately, who speaks of it as only 'deciding whether the conclusion follows fairly from the premises or not.' Upon this point we may quote the words of the late Rev. Baden Powell, M.A., F.R.S., who, in his 'Essays on the Spirit of the Inductive Philosophy, &c.' (1855), in criticising what Whately has said on Aristotle (Anal. Prior. ii. 25), says, 'Aristotle's view is simply reducible to this, that when an inductive argument is put into the form of a syllogism it necessarily involves, as the major premiss, the assumption that *all* objects of the kind, of which

some are enumerated, are *like those enumerated* in the particular respect specified.'

Archbishop Whately further says, 'And here it may be remarked that the ordinary rule of fair argument—viz., that in an enthymeme the suppressed premiss should be always the one of whose truth *least doubt* can exist—is not observed in induction; for the premiss which is usually the more doubtful of the two is in this case the *major*, it being in many cases not quite certain that the individuals, respecting which some point has been ascertained, are to be fairly regarded as a sample of the whole class; and yet the major premiss is seldom expressed, for the reason just given, that it is easily understood, as being (*mutatis mutandis*) the *same* in every induction.' We demur to this statement, that in induction the major premiss is the more doubtful of the two, and affirm that it is essential to the method that the major premiss be regarded as absolutely certain. As, for example, in one of the instances he gives: we have before us a magnet, and argue that it will attract iron, on the ground that all magnets attract iron. The major premiss, 'All magnets attract iron,' is felt to be entirely without any element of doubt, though we may not have made more than a few experiments, with perhaps a single magnet. It is in

this remarkable power of reaching far beyond our actual experience that the value of induction chiefly consists, and by this grand characteristic induction has been distinguished from deduction. In the former, the conclusion is larger than the premises; in the latter, it is smaller. This is happily expressed in 'Outlines of the Laws of Thought' (1849), by Dr. William Thomson, now Archbishop of York, at p. 312, where he writes, 'Philosophy proceeds upon a system of credit, and if she never advanced beyond her tangible capital her wealth would not be so enormous as it is;' or, to use the words of Sir J. Herschel, 'The general proposition is more than a sum of the particulars;' and he gives the evidences of a sound induction to be not only that it is marked by the 'consilience of inductions,' but that the elements are forgotten, and we arrive at a general, perhaps a universal, proposition, and that it enables us to 'predict.' A relevant and pleasing instance illustrative of our general view is to be found in the case of the discovery of the well-known atomic theory by Dalton at the beginning of this century. Dr. Whewell thus records it:— 'Mr. Dalton's generalisation was first suggested during his examination of olefiant gas and carburetted hydrogen gas; and was asserted generally, on the strength of a few facts, being,

as it were, irresistibly recommended by the clearness and simplicity which the notion possessed.'

Our view of the nature and value of the inductive method will be much affected by our conviction as to the foundation on which it rests. If we find in the natural world nothing more than a succession of phenomena, without any suggestion of causation and of a great Divine Worker, and in induction only a conclusion from a collection of instances—a conclusion not extending beyond those instances—we shall not set a high value upon the inductive method. But we ourselves are efficient causes. Our actions are the results of our volitions. Our thoughts and language declare as to be not mere spectators of phenomena, but responsible actors. We have daily as real and as reliable experience of causation as of phenomena. The man who denies that he acts and is responsible for his actions is as truly a madman as the ancient philosopher who, denying the existence of matter, was crushed beneath a cart-wheel and forfeited his life for his folly. Having this idea of causation written in our nature, and experienced in our daily life, we find ourselves impelled to recognise it in the greater works of our Creator. We do not merely find together the magnet and the property of attracting metals,

but we as certainly know that the magnet attracts the iron. And so thoroughly is this idea of causation inwrought into our nature that if we only see something accomplished, we call it an effect and assume a cause. Along with this experience of causation, we find our minds impelled to regard the cause as universal in the class of which we have had experience of one or more instances. Finding that one magnet attracts iron, we affirm at once that all magnets attract iron. This, which is inadequately described as the 'uniformity of the laws of nature,' has been called 'the ultimate major premiss of every induction.' We claim for this impulse of the mind as high an authority as we give to those mental impressions on which we rely for our conviction of the existence of external nature.

In confirmation of our view we quote the words of Rev. James Martineau, given in 'A Word for Scientific Theology, in appeal from the Men of Science and the Theologians: an Address at the opening of the Session 1868-9 of the Manchester New College, October 5, 1868':—

'We are made capable of knowing not only that which happens, but that which is; not only phenomena, but existences; not only laws, but causation; and this additional knowledge not only is just as certain as the other, but

actually underlies it as its condition, and has to be assumed in every inductive proposition. Space, for example, infinite space, is no phenomenon, and no law of phenomena, but a necessary existence, of which we have more absolute assurance than of any physical changes occurring within it. Casual Power, again, is no phenomenon, and is more than the law of phenomena: it evades your senses, which notice only the changes which take place; it evades your registering memory, which can record only their order of succession; yet you so believe in it that you cannot speak of a natural fact without assuming it; the language of all physical sciences is steeped in the conception of it, and the whole tissue of relations among them is woven by the dynamical idea. These interpreting ideas, not inductively reached, but furnished by the intellect itself as organising principles for its experience, no one can help accepting as exponents of reality, and treating as a part of his knowledge. They are the sources of his deductions (as geometry works out the idea of space), without being the result of his inductions. Even, therefore, within the limits of physical knowledge the mind is introduced to existences, real and not phenomenal, which are no part of its scientific discovery, yet which form the very cement of its conceptions, and

deserve whatever trust belongs to the primary conditions of intelligence itself.

‘Among the existences thus disclosed in the very structure of our faculties, only half hid till the moral nature speaks, is the Divine. Conscience is as much a human fact as reason and perception, and is no less entitled to be believed on its word. And if there is anything invariably clear in its utterance, it is this—that we live under an authority above us, speaking in the law of right and wrong, and wielding our compunctions as ministers of justice; therefore, from the very nature of authority, under a living will transcending our personality and communing with it. The Divine rule over life is no less correlated to the moral faculty than the existence of an external world to the perceptive; and as there is no difference in the nature of their evidence, so are they held with equal cogency of natural belief wherever men are found; and they first come into question together when the mind’s instinctive reliances are corroded by the action of false metaphysics.’

His statement includes and extends beyond what we have affirmed.

But it is stated by Mr. John Stuart Mill, in opposition to the view we are maintaining, that our conviction that the laws of nature are uniform does not afford a safe ground for the in-

ductive method; and he suggests that if we were to adopt this ground we should be led into mistake. The dweller in the tropics who had never seen ice would affirm that all water is in a liquid form; and he who had not seen a black swan would affirm that all swans are white: just as we argue that all magnets attract iron.

To this objection, which we regard as of no weight, though deserving of respectful consideration, because of the eminence of the author who urges it, we reply in the words of Dr. M'Cosh, given at p. 253 of the work already quoted. He says, 'In the one we see nothing in the nature of things to necessitate the law; we adhere to it simply on the ground of the number of instances; and we can readily be made to believe that the law is limited in range, and that there are exceptions. But in the other class the relation is in the very nature of the things; we discover it at once by looking at the things; we believe it to hold wherever the things exist; and we cannot be made to decide otherwise.'

We find the inductive method evolved and vindicated in the knowledge we have of our own minds, and in our experience of their processes in using or investigating the world without. As it is finely expressed by CErsted

in 'The Soul of Nature,' p. 18:—'If the laws of reason did not exist in Nature, we should vainly attempt to force them upon her; if the laws of Nature did not exist in our reason, we should not be able to comprehend them.'

But, although we thus write, we do not overlook the importance of what the late Baden Powell has admirably developed in the work already quoted, that although in arguing from any single instance we seem to be building on a narrow basis, yet that our experience of the uniformity of nature, which is the underlying assumption, is very great. Our own experience may have extended through years. It is supplemented by the experience of millions of men, and by that of the former ages. And there is a powerful negative argument. We believe that if there were opposing facts, they would before now have been brought forward. We give only a secondary place to his view, 'that the soul of induction is analogy;' but if we give any place to it, we shall see the value of the historical verification of the inductive method, according to his explanation.

In the application of the inductive method it will be necessary to be constantly on our guard against the several *Idola* (*εἰδωλα*—false appearances) that may arise to pervert the truth, or to usurp its place. Fidelity to the

method is itself a safeguard, but in our present imperfect state, to keep the possible *Idola* in view will have its advantage; as Bacon expresses it in his '*Novum Organum*,' Aphorism xl.:—'*Excitatio notionum et axiomatum per inductionem veram, est certe proprium remedium ad idola arcenda et summovenda; sed tamen indicatio idolorum magni est usus.*'

The first he mentions are the *Idola tribus*. These are common to the race. Bacon compares the human mind in its present condition to a curved or cut mirror, which combines its own shape with the image reflected and distorts it:—'*Estque intellectus humanus instar speculi inæqualis ad radios rerum, qui suam naturam naturæ rerum immiscet, eamque distorquet et inficit.*' Against such *Idola* the student of Scripture must be forewarned. The tendency either to think hardly of God, or, on the contrary, to lose sight of His justice in considering His mercy, or the tendency to extenuate human conduct and to think lightly of sin, may be taken as examples of prejudices that may dull our spiritual perception, and prevent us from receiving in their integrity the principal teachings of God's Word.

The second class he names, the *Idola specus*, are the mental idiosyncracies or prejudices of the individual mind. Just as in society some

are born to rule and others to serve, so some minds tend to analysis, and delight in an excessive dividing and distinguishing of one thing from another, while others are synthetically inclined, and in danger of combining and confounding things that fundamentally differ. To this Idol Bacon refers in Essay xxvi. p. 112: ‘Heraclitus saith well, in one of his enigmas, *Dry light is ever the best.* And certain it is that the light that a man receiveth by counsel from another is drier and purer than that which cometh from his own understanding and judgment, which is ever infused and drenched in his affections and customs.’ And in his ‘Advancement of learning,’ book i. chap. i. § 3: ‘When men fall to framing conclusions out of their knowledge, applying it to their particular, and ministering to themselves thereby weak fears or vast desires, there groweth that carefulness and trouble of mind which is spoken of: for then knowledge is no more *Lumen siccum*, whereof Heraclitus the profound said, *Lumen siccum optima anima*; but it becometh *Lumen madidum* or *maceratum*, being steeped and infused in the humours of the affections.’ The student of the Holy Scriptures finds there facts and teachings designed for the use of all, and, therefore, presented in such a way as to appeal to what is common to all. To give them a

reception in harmony with their character and worthy of it, he must look beyond the narrow cavern of his own musings and fancies, and hold in check what is special and eccentric in his own mental constitution and habit of thought. And it is the more necessary that he should do this, because the Scriptures are designed to produce an effect upon his character and life; and this may be prevented if the mind itself by its prejudices or peculiarities stands arrayed against the beneficial and salvatory work the Scriptures were written to accomplish.

The two other classes of *Idola* mentioned by Bacon, the *Idola fori* and the *Idola theatri*, the deceptions that arise in society, and that are rendered permanent by the use of class-words or technical words, and those that are entrenched in time-honoured and seemingly authoritative systems, also demand the attention of the Bible student. In matters of theology, superstition and priestly assumption are allies of prejudice, and combine with it to insist on the unhesitating and unqualified reception of prescribed shibboleths and systems. By an easy fallacy, the sacred authority that belongs to the Scriptures themselves is transferred to the favourite interpretation, or to the human addition. Words that should be the

best unfolding of meaning, and that should give place at once to others more clearly conveying that meaning, have been regarded as the ramparts round an unused and mysterious possession. They have seemed to preserve what was within; they have really excluded those who were without. Instead of being instruments of thought, they have too often detained men in useless logomachies. Bacon thus speaks of them: ‘Sed verba plane vim faciunt intellectui, et omnia turbant; et homines ad inanes et innumeras controversias et commenta deducunt.’ And who shall measure the injury done to the cause of truth by the party spirit and polemical strife evoked by attachment to contending systems? Those systems, like the theories of philosophers, have become connected with persons who have felt an affection for them; and have at length had on their side great names, high antiquity, imposing numbers, and worldly advantage. Their concomitants have occupied so much attention that the question of their truthfulness has been overlooked.

CHAPTER II.

THE INDUCTIVE METHOD—WHAT IT HAS BEEN,
ILLUSTRATED BY THE EXPERIENCE OF SEVERAL
EMINENT INDUCTIVE ENQUIRERS.

WE propose in this chapter to bring before the reader a brief account of some of the principal inductive philosophers, that he may learn by examples what the method has been in men, and that he may catch its spirit from the greatest masters. We shall pass over the ancients. Not because they were ignorant of the method, but because they were unfaithful to it. Aristotle, for example, who is sometimes erroneously placed in direct contrast with inductive philosophers, collected a great body of facts in his works—*e.g.*, in those ‘On Colours’ and ‘On Sounds.’ He did employ the inductive method, but, distrusting it, he so combined with it word-worship, reverence for pre-determined notions, and premature deduction as to entirely vitiate the process. This has been admirably stated in G. H. Lewes’s valuable work on ‘Aristotle,’ where he shows that

the ancients were defective in the amount of time given to observation and experiment, and in the instruments they used. They collected facts, but, instead of observing them and verifying the conclusions reached from them, they soon parted company with the subjects of their observation and investigation to draw from what seemed to them a more fruitful source—the thoughts and imaginings of their own minds. Hence, to use the words of Dr. Whewell, they ‘ran into barren abstractions and ever-recurring cycles of subtlety.’ And thus building without sound materials or secure architecture, their unsubstantial edifices have provided no shelter or home for man, who needs that which is alike serviceable and true. The ancients missed the magnificent opportunity afforded to them; lacking the special impulse the men of a later age were to obtain from Christianity, they did not receive the spirit of the inductive method; and hence they came to a stand in relation to scientific progress and the greatest interests of man, notwithstanding their favouring climate, their natural endowments, and their splendid achievements in government and conquest, in poetry, eloquence, and art. For, to quote again from Dr. Whewell, ‘we cannot consider otherwise than as an utter failure an endeavour to discover the causes of

things, of which the most complete results are the Aristotelian physical treatises, and which, after reaching the point which these treatises mark, left the human mind to remain stationary, at any rate on all such subjects, for nearly two thousand years.'

We shall take as our first example our distinguished fellow-countryman Roger Bacon (b. 1214). After acquiring what was to be learned at Oxford, he went to study general science at Paris, where he became weary of the blind homage paid to Aristotle. Subsequently he returned to Oxford, and collected money, to obtain books and make experiments. He became acquainted with several languages, and with almost the whole circle of knowledge, as far as it was at that time discovered, not neglecting to bring everything to the test of his own careful investigations. He wrote the 'Opus Minus' and the 'Opus Tertium,' but his principal work was his 'Opus Majus,' a collection of tracts or treatises, bearing date 1266. It was edited in Latin by Dr. S. Jebb in 1733. It has been called the 'Encyclopædia and the Novum Organon of the thirteenth century.' Dr. Whewell regards the existence of such a work as the 'Opus Majus' at that period as a problem which has never yet been solved.

It would be foreign to our plan to give an outline of the work, which treats of geography, chronology, astronomy, optics, mathematics, grammar, music, philosophy, theology, and of several special subjects in science—*e.g.*, the explanation of the phenomena of the rainbow. But the inductive character of the work can be seen by the manner of the commencement. He begins by observing that there are four great impediments which hinder men from arriving at true and useful knowledge, which he lays down thus:—I. Too great dependence on authority. II. Allowing too great weight to custom. III. The fear of offending the vulgar. IV. The affectation of concealing ignorance by the display of a specious appearance of knowledge. But the most remarkable part of the '*Opus Majus*,' and that which is of most importance to our argument, is the sixth and last part, entitled '*De Scientiâ Experimentalî*.' Of it Dr. Whewell justly remarks, 'It is indeed an extraordinary circumstance to find a writer of the thirteenth century, not only recognising experiment as one source of knowledge, but urging its claims as something far more important than men had yet been aware of, exemplifying its character by striking and just examples, and speaking of its authority

with a dignity of diction which sounds like a forerunner of the Baconian sentences uttered nearly four hundred years later. Yet this is the character of what we here find.' We need not be surprised that the dark ages resented the brightness of so great a luminary, and sought to conceal it by throwing Friar Bacon into prison ; nor to learn that his labours were temporarily neutralised by the special efforts then made by St. Thomas Aquinas and the two orders of Franciscans and Dominicans in favour of the Aristotelian method. But the light could not be for ever concealed ; it has burst through every cloud. The seed was hidden, but it was a true one, and it has borne good, though late fruit.

Christopher Columbus (1445–1506), though more usually thought of as a navigator than as a philosopher, we regard as one of the chief leaders of the modern inductive movement. No doubt he was an enthusiast, and without enthusiasm he would not have been able to have sustained himself through so many trials, nor to have inspired Queen Isabella to strip herself of her jewels to provide the means for his expedition, nor to have persuaded his crews to be faithful to him, as they kept sailing away into what seemed to them to be a shoreless immensity. But his enthusiasm was earnest

and lasting, because it had a basis in reason and fact. When but a youth, he made voyages to determine facts—*e.g.*, whether Iceland was habitable. And when he married the daughter of the travelled Italian Patestrello, Governor of Porto Santo, he regarded his father-in-law's charts and journals as a valuable dowry. His hope of discovering the western world was not the dream of a disordered imagination. He was familiar with the charts of the world as it was at that time known to Europeans, and as he gazed upon them a conviction arose in his mind that he was looking upon but a part of the great whole. To test this conviction, he enquired how the subject had appeared to others. His conviction was strengthened and confirmed by meeting with several learned authorities for the same view. And, still working inductively, he enquired of many navigators, and found that they had recorded many facts, such as the floating of trees and the flight of birds in such directions, as seemed to indicate that there was a new world in the West. And to his religious mind the expectation possessed a sacred interest, as he hoped to carry God's message of mercy to the remaining part of the world, and at once to complete the triumph of discovery and the circle of Christian rule and blessing.

As his continued and long-suffering search was a noble example of perseverance in inductive enquiry, so his magnificent success was the greatest stimulus to others to adopt the same method. And there were not wanting many noble imitators, like Sir Walter Raleigh, who followed in the same track, and achieved similar successes. The whole effect of such an example it would be difficult to measure or exaggerate; it will not fail of acknowledgment in an age in which his own Church has canonised him, and in which his memoir has been re-written, and read anew with the greatest avidity.

Of the impulse likely to be received by the human mind from the knowledge of the new facts he had discovered, Humboldt has well said ('Cosmos,' vol. ii. p. 202), 'The discovery and exploration of the New Continent, with its lofty Cordilleras and their numerous volcanoes, its elevated plateaus, with successive stages of climate placed one above another, and its various vegetation, ranging through 120 degrees of latitude, mark incontestably the period in which there was offered to the human mind, in the smallest space of time, the greatest abundance of new physical perceptions.'

Copernicus (1472-1543) must be mentioned

rather as an inductive pioneer than as a true inductive philosopher. In his investigations he could not shake himself free from early prejudices in favour of the Ptolemaic spheres, in favour of certain figures, because they were esteemed *perfect*, and in favour of the assumed *centrum mundi*; yet his enquiries as the interrogator of nature enabled him to propound fully the heliocentric view, notwithstanding the difficulties that encompassed it at that stage of mathematical knowledge.

Sir Francis Bacon, Baron Verulam (1561–1626), although he is justly regarded as the greatest promoter of the inductive method the world has yet seen, cannot claim a high place as a discoverer. Occupied in Parliament, or with the duties of his elevated legal office, his life was too short for the successful prosecution of his researches. And, although he did not neglect investigation, yet he gave all the time he could command, and the best energies of his cultivated and powerful mind and his lofty genius, to the statement and vindication of the true, though neglected, method of enquiry. We must therefore look to his writings to learn what the operation of the inductive method was in him.

Not the least valuable service Bacon rendered to true philosophy was the strong protest he

made against the dominion of words and theories and systems, of great or ancient names, and of prejudice, whether in the mind of the individual or of the multitude. In his essay on the Praise of Knowledge he says, 'Are we the richer by one poor invention, by reason of all the learning that hath been these many hundred years? The industry of artificers maketh some small improvement of things invented; and chance, sometimes, in experimenting, maketh us to stumble upon somewhat which is new; but all the disputation of the learned never brought to light one effect of nature before unknown. When things are known and found out, then they can descant upon them, they can knit them into certain causes, they can reduce them to their principles. If any instance of experience stand against them, they can range it in order by some distinctions. But all this is but a web of the wit; it can work nothing. I do not doubt but that common notions, which we call reason, and the knitting of them together, which we call logic, are the art of reason and studies. But they rather cast obscurity, than gain light to the contemplation of nature.' And farther on in the same essay he says, referring to the ancients, 'Many of these men had greater wits, far above mine own, and so are many in the universities of

Europe at this day. But, alas! they learn nothing there but to believe; first to believe that others know that which they know not, and after themselves that which they know not. But, indeed, facility to believe, impatience to doubt, temerity to answer, glory to know, doubt to contradict, end to gain, sloth to search, seeking things in words, resting in part of nature; these and the like have been the things which have forbidden the happy match between the mind of man and the nature of things, and in place thereof have married it to vain notions and blind experiments; and what the posterity and issue of so honourable a match may be it is not hard to consider.'

'Printing, a gross invention; artillery, a thing that lay not far out of the way; the needle, a thing partly known before; what a change have these three made in the world in these times—the one in state of learning, the other in state of the war, the third in the state of treasures, commodities, and navigation! And those, I say, were but stumbled upon and lighted upon by chance. Therefore, no doubt the sovereignty of man lieth hid in knowledge; wherein many things are reserved, which kings with their treasure cannot buy, nor with their force command; their spials and intelligencers

can give no news of them, their seamen and discoverers cannot sail where they grow. Now we govern Nature in opinions, but we are thrall unto her in necessity; but if we would be led by her in invention, we should command her in action.'

In book i. of his 'Novum Organum,' Aphorism xcv. is as follows:—'Those who have treated of the sciences have been either empirics or dogmatical. The former like ants only heap up and use their store, the latter like spiders spin out their own webs. The bee, a mean between both, extracts matter from the flowers of the garden and the field, but works and fashions it by its own efforts. The true labour of philosophy resembles hers, for it neither relies entirely or principally on the powers of the mind, nor yet lays up in the memory the matter afforded by the experiments of natural history and mechanics in its raw state, but changes and works it in the understanding. We have good reason, therefore, to derive hope from a closer and purer alliance of these faculties (the experimental and rational) than has yet been attempted.'

In the first book of his work 'The Advancement of Learning,' when speaking of St. Paul's expression 'science falsely so called,' he says, 'This kind of degenerate learning did chiefly

reign amongst the Schoolmen : .who, having sharp and strong wits, and abundance of leisure and small variety of reading, but their wits being shut up in the cells of a few authors (chiefly Aristotle their dictator), as their persons were shut up in the cells of monasteries and colleges, and knowing little history, either of nature or time, did out of no great quantity of matter and infinite agitation of wit spin out unto us those laborious webs of learning which are extant in their books. For the wit and mind of man, if it work upon matter, which is the contemplation of the creatures of God, worketh according to the stuff, and is limited thereby; but if it work upon itself, as the spider worketh his web, then it is endless, and brings forth indeed cobwebs of learning, admirable for the fineness of thread and work, but of no substance or profit.' And a little farther on, in speaking of those who neglect the contemplation of nature and unduly reverence the mind, he says, ' Upon these intellectualists, which are notwithstanding commonly taken for the most sublime and divine philosophers, Heraclitus gave a just censure, saying, *Men sought truth in their own little worlds, and not in the great and common world* ; for they disdain to spell, and so by degrees to read in the volume of God's works, and contrariwise by continual meditation and

agitation of wit do urge and as it were invoke their own spirits to divine and give oracles unto them, whereby they are deservedly deluded.' Bacon also complained of Aristotle, that he 'corrupted natural philosophy with logic,' and that he was 'all along more solicitous how men might defend themselves by answers and advance something that should be *positive in words*, than to *come at the inward truth of nature*.' And although he commends him for 'having made so diligent and exquisite a history of living creatures,' he says, 'It is true his books of animals, problems, and other pieces make frequent use of experiments, but then he first pronounced without their assistance, and did not duly consult experience in forming his degrees and axioms; but after he had passed judgment according to his own humour, he winds experience round, and leads her captive to his own opinions.' So strongly has Bacon expressed himself as to the necessity of looking upon outward nature, the result of his recalcitration against the mental bondage of centuries, as to suggest the possibility of his having overrated natural science and underrated the importance of mental phenomena. Hence the Positivists of our day claim for their system the authority of his great name. But not we believe justly. It is true he declares

natural philosophy to be 'the great mother of the sciences.' But the impression we gain from his writings is that although he begins with phenomena and their succession, he does not stay there, but recognises the idea of cause, and especially the existence, goodness, and power of the Great First Cause.

Bacon has also performed a great service to the inductive method by the careful and elaborate manner in which he has unfolded it. We have already in the first chapter spoken of the 'Idols' he describes and warns against. We may further mention, as illustrative of his valuable elaboration, the twenty-seven species he gives of 'Prerogative Instances,' or facts regarded according to their nature and value in relation to the work of discovery. But most of all we are indebted to Bacon for the inductive *spirit* that everywhere breathes in his writings. This characterises them as a whole, and shines in almost every page. It has infused itself into the minds of many who in their discoveries have far surpassed their greater master, and it has wrought as a leaven of good in society in every age that has succeeded him. To use the words of Sir John Herschel in his 'Discourse on the Study of Natural Philosophy' (p. 114), 'It is not the introduction of inductive reasoning, as a new and hitherto untried process, which

characterises the Baconian philosophy, but his keen perception, and his broad and spirit-stirring, almost enthusiastic, announcement of its paramount importance, as the alpha and omega of science, as the grand and only chain for the linking together of physical truths, and the eventual key to every discovery and every application.'

Of the great Galileo (1564–1642), Milton's friend, as an inductive philosopher, we need only say that by the use of the telescope in 1609 he opened a new future to astronomy, and exerted an influence upon the whole circle of the sciences. In the revolutions of the moons of Jupiter he saw the solar system in miniature, and his views were confirmed by what he saw of the ring of Saturn, and the changing phases of Venus. Sir David Brewster, in his work '*The Martyrs of Science*,' &c. (1844), justly attributes the success of Galileo to his faithfulness in using the inductive method.

Kepler (1571–1630) had a genius that led him to the formation of many ingenious theories. He is said to have 'constructed no less than nineteen hypotheses for representing the apparent motion of Mars, before that of an elliptic orbit about the sun suggested itself to his mind—which proved the true one and the simplest of them all.' But he was

alive to the perils of theorising, and carefully brought all his theories to the test of fact, and at once abandoned whatever would not bear that test. He says, 'The opinion advanced by Rheticus in his narrative is improbable, where he reasons from the sanctity of the number six to the number of the six movable heavens; for he who is enquiring of the frame of the world itself must not derive reasons from numbers, which have gained importance from things of later date.' 'In the year 1595,' he says, 'I brooded with the whole energy of my mind on the subject of the Copernican system. There were three things in particular of which I pertinaciously sought the causes why they are not other than they are—the number, the size, and the motion of the orbits.' A conviction had become strong in his mind of the existence of numerical and geometrical laws connecting the distances, times, and forces of the bodies which revolve about the central sun. And he rested not till he had reached his world-renowned law, that the squares of the periodic times are in the same proportion as the cubes of the distances. But he had to go through darkness to light. And, though sometimes stumbling, he perseveringly pressed on. He says, 'My first error was that the path of a planet is a perfect circle; an opinion which was a more mischievous thief

of my time in proportion as it was supported by the authority of all philosophers and apparently agreeable to metaphysics.' No jealousy of others or proud regard for a position taken up by himself prevented him from receiving truth, from whatever quarter it might come. His friend Wachenfels having informed him that Galileo had, with the newly invented telescope, discovered Jupiter's moons, he wrote to his friend, 'On our parting I immediately began to think how there could be any addition to the number of the planets without overturning my "Cosmographic Mystery," according to which Euclid's five regular solids do not allow more than six planets round the sun. . . . I am so far from disbelieving the existence of the four circumjovial planets that I long for a telescope, to anticipate you, if possible, in discovering two round Mars, as the proportion seems to require six or eight round Saturn, and perhaps one each round Mercury and Venus.' He valued his failures, and with a pleasing *naïveté* recorded them minutely. His joy in success was only equalled by his ceaseless industry in achieving it. Dr. Whewell says of him, 'Kepler certainly was remarkable for the labour which he gave to his self-refutations, and for the candour and copiousness with which he narrated them; his works are in this way extremely curious

and amusing, and are a very instructive exhibition of the mental process of discovery. He never allowed the labour he had spent upon any conjecture to produce any reluctance in abandoning the hypothesis as soon as he had evidence of its inaccuracy. The only way in which he rewarded himself for his trouble was by describing to the world in his lively manner his schemes, exertions, and feelings.' To the mystic mind of Kepler the stellar world was not a piece of material machinery, but an assemblage of beings his God had created. They had to him a living interest. Hence his rapturous delight when by his discovery he had as it were drawn them into his circle as friends. He says, 'The intense pleasure I have received from this discovery never can be told in words. I regretted no more the time wasted; I tired of no labour. I shunned no toil of reckoning; days and nights I spent in calculations, until I could see whether this opinion would agree with the orbit of Copernicus, or whether my joy was to vanish into air.' And we must not omit his oft-quoted rhapsodic words, uttered in the hour of his delight—'It is now eighteen months since I got the first glimpse of light, three months since the dawn, very few days since the unveiled sun, most admirable to gaze on, burst out upon me. I will indulge in my

sacred fury; I will triumph over mankind by the honest confession that I have stolen the golden vases of the Egyptians to build up a tabernacle for my God far away from the confines of Egypt. If you forgive me, I rejoice; if you are angry, I can bear it; the die is cast, the book is written; to be read either now or by posterity, I care not which; it may well wait a century for a reader, as God has waited six thousand years for an observer.' This will suffice to show that Kepler followed the advice of Tycho Brahe his master, who urged him 'to lay a solid foundation for his views by actual observation, and then by ascending from these to strive to reach the causes of things.'

The course of Sir Isaac Newton (1642-1727), who has been called 'the Columbus of the physical world,' was a continual illustration of the inductive method. His absence of mind made him appear eccentric, but it arose, not from lapse of mental power, but from an unusual ability to concentrate his attention upon the object before him. He says, 'I keep the subject of my enquiry constantly before me, and wait till the first dawning opens gradually, by little and little, into a full clear light.' When he was at school at Grantham he lodged at the house of an apothecary, where he spent his time in making windmills and water-clocks. He used also

to draw diagrams, fly kites with a view to scientific knowledge, and mark with pegs the movements of the solar beams. At Woolsthorpe, his birthplace, he carved two sundials on the wall of the house where he was born. Sent to market, he would forget the produce he was entrusted with, and be found studying under the shade of a hedge. At Cambridge his professors found him beyond them in his knowledge of Kepler's 'Optics' and similar works. Euclid he put aside as a trifling book, though he afterwards regretted this mistake. In Descartes' 'Geometry' he found something for his mind to feed on. But he did not rest in books. His remarkable knowledge of optics was the result of experiment. It was by this means that he arrived at the fact of the different refrangibility of the rays of light.

His view of natural philosophy is given in his 'Scheme for Establishing the Royal Society' as follows:—'Natural philosophy consists in discovering the frame and operations of nature, and reducing them, as far as may be, to general rules or laws, establishing these rules by observations and experiments, and thence deducing the causes and effects of things.' In his own pursuit of philosophy we mark in him a very humble view of his own powers, a burning desire to know the facts and laws of nature, an

almost superhuman patience in seeking them, and a settled purpose to yield theories, however dear, to the facts of God as soon as they were known.

The great achievement of Newton in rising inductively to the belief in the universality of the law of gravitation, whether in the atom, in the solar system, or in systems remote from it, produced, as it has been said, 'the first example of the formation of a perfect inductive science.' In writing to Robert Hooke in 1785 he says, 'If I have seen farther, it is by standing on the shoulders of giants.' He did see farther, and he had the grace and genius to accept and extend the discoveries of his great predecessors. Whewell thus expresses his advance upon his distinguished predecessor Kepler:—'Kepler's laws were merely *formal* rules, governing the celestial motions according to the relations of space, time, and number. Newton's was a causal law, referring these motions to mechanical reasons.' His great law of gravitation was necessarily open to many tests, and the following example will illustrate his submission to facts, and at the same time his intense interest in the result of an appeal to them:—According to his calculations, the moon, by her motion in her orbit, was deflected from the tangent every minute through a space of 13 feet; but according to the rule,

verified on the earth's surface, it should have been 15 feet. He was not able to remove the discrepancy, but in 1682 he found that his calculations must be corrected by the exact measure, then first obtained, of a degree of latitude. When this was arrived at by Picart, it is said that Newton was too excited to correct his previous calculations by the new measurement, though when they were corrected the discrepancy was removed, and his theory confirmed.

Of Hipparchus, who discovered in the second century the revolution of the heavenly bodies, Ptolemy said he was 'a most truth-loving and labour-loving person.' This was emphatically true of Newton. In the application of the principle of gravitation he found himself confronted with the most abstruse and difficult problems the mind of man has ever contemplated. But, with a patience almost more than human, he bent the energies of his gigantic genius to the solution of these problems, not doubting that in the issue they would be found to be confirmations of the principle he had announced. This patient research was equalled only by the magnanimous readiness with which he recognised the claims of other discoverers, and with which he was willing to lay aside his results in favour of theirs so soon as the trembling balance of

proof inclined to their conclusions. Speaking of Newton in old age, Dr. Pemberton says, 'Neither his extreme age nor his universal reputation had rendered him stiff in opinion, or in any degree elated. Of this I had occasion to have almost daily experience. The remarks I continually sent him by letters on the "*Principia*" were received with the utmost goodness. These were so far from being any ways displeasing to him that, on the contrary, they occasioned him to speak many kind things of me to my friends, and to honour me with a public testimony of his good opinion.' And when Mr. Molyneaux's perpendicular telescope at Kew had discovered a nutation of the earth that threatened to invalidate the Newtonian system, the discoverer was afraid to break the news to Sir Isaac. But on doing so the philosopher replied, 'It may be so: there is no arguing against facts and experiments.'

The following neat example of the inductive method will show what it was in the mind of a distinguished modern French philosopher, Joseph Louis Gay Lussac (1778-1850). He says, 'The experiments which I have described, and which have been made with great care, prove incontestably that oxygen, hydrogen, azotic, nitrous acid, &c., &c., expand equally by equal increments of heat; therefore the result

does not depend upon physical properties, and I collect that all gases expand equally by heat,'—his well-known law.

In our own days we have had in Michael Faraday (1790–1867) a noble example of a true inductive philosopher. With the highest genius for forming splendid theories he combined the diligence and patience of the humblest interrogator of nature's facts. He was never weary of making experiments, nor of recording and tabulating them for future use. He regarded all his papers as useful to himself, and none more so than the erroneous or misdirected, as pointing out the faults it became him to watch for and avoid. Professor Tyndall, in his most instructive volume, 'Faraday as a Discoverer,' quotes a letter written to De la Rive, September 2, 1858, in which Faraday, having said that as a youth he was not a deep thinker, but lively and imaginative, adds, 'But facts were important to me, and saved me. I could trust a fact, and always cross-examined an assertion. So when I questioned Mrs. Marcet's book (he refers to her "Conversations on Chemistry") by such little experiments as I could find means to perform, and found it true to the facts as I could understand them, I felt that I had got hold of an anchor in chemical knowledge, and clung fast to it.' He valued

theories as suggesting the path to facts and their laws, but regarded them with suspicion as too often misleading, and always held them to be temporary and uncertain till thoroughly based on facts. So we find him saying of M. Arago, 'I have always admired the prudence and philosophical reserve shown by M. Arago in resisting the temptation to give a theory of the effect he had discovered, so long as he could not devise one which was perfect in its application, and in refusing to assent to the imperfect theories of others.' As he pursued his noble course without regard to mercenary considerations, so the idea of rejecting from the field of enquiry everything that did not yield an immediate material return was offensive to him. In his view, everything was part of the great whole, made for wisest ends. In 1817, when lecturing before a private society in London on the element chlorine, Faraday thus expressed himself with reference to this question of utility:— 'Before leaving this subject, I will point out the history of this substance, as an answer to those who are in the habit of saying to every new fact, "What is its use?"' Dr. Franklin says to such, "What is the use of an infant?" The answer of the experimentalist is, "Endeavour to make it useful."'

Professor Tyndall says of Faraday, 'He hated

what he called "doubtful knowledge," and ever tended either to transfer it into the region of undoubtful knowledge, or of certain and definite ignorance. Pretence of all kind, whether in life or in philosophy, was hateful to him ;' and at p. 121 of the same work he says, 'He incessantly employed hypotheses to gain experimental ends, but he incessantly took them down, as an architect removes the scaffolding when the edifice is complete. "I cannot doubt," he says, "that he who as a mere philosopher has most power of penetrating the secrets of Nature, and guessing by hypothesis at her mode of working, will also be most careful, for his own safe progress and that of others, to distinguish the knowledge which consists of assumption, by which I mean theory and hypothesis, from that which is the knowledge of facts and laws."'

CHAPTER III.

WHAT MODERN SCIENCE OWES TO THE INDUCTIVE METHOD.

THE immeasurable obligation of science (using the word in its restricted sense), in our own day, to the inductive method can be shown either positively by adducing the actual results of its application, or negatively by referring to the long periods in the world's history during which other methods were being tried almost entirely in vain. If we take our stand in the centre of one of our great manufacturing towns, and observe what is going on around us, we are struck to find an assemblage of scientific facts that could not have been collected in any previous century of the world's history, and our astonishment increases when we find that they are not the gradual growth of many ages, but belong almost exclusively to modern times. The materials employed are brought from countries unknown to antiquity, across seas the ancients would have feared to traverse, in

vessels of a form and capacity and attaining a speed that would have filled with wonder the most advanced discoverers of early times. The materials thus obtained are wrought upon by complicated machines, and subjected to forces and processes by which are produced results multiform and innumerable, to meet the various wants, not of the favoured few merely, but of the masses of modern society. And the artificers themselves, while engaged in the work, have—in the food and drink they partake of, in their own means of communication or of locomotion, and in the artificial light that changes their night into day, and in the facts they are familiar with, and in the literature that supplies them with mental food or recreation, and in their own habits of thought—continually much that is the privilege of this later age, and of this alone. This broad fact is generally admitted. The great development of any single branch of science or art in remote antiquity does not call it in question. The colossal works of Egypt, the unrivalled ceramic products of ancient China, the elaborate civilisation suggested by remains from central America or Etruria, the fact that a few of the secrets of the chemistry of the ancients or of their manipulative skill have been lost, can be admitted without invalidating the general view.

The negative view is scarcely less convincing. We may single out any age or era of antiquity, and, however great might have been its advantages and attainments, yet we shall find that, lacking an accurate knowledge and a faithful application of the inductive method, it fell far behind the scientific advancement and discoveries of the present era. To quote the words of Sir John Herschel in the work already referred to, ‘ Previous to the publication of the “*Novum Organum*” of Bacon, natural philosophy, in any legitimate and extensive sense of the word, could hardly be said to exist. Among the Greek philosophers, of whose attainments in science alone, in the earlier ages of the world, we have any positive knowledge, and that but a very limited one, we are struck with the remarkable contrast between their powers of acute and subtle disputation, their extraordinary success in abstract reasoning, and their intimate familiarity with subjects purely intellectual, on the one hand; and, on the other, with their loose and careless consideration of external nature, their grossly illogical deduction of principles of sweeping generality from few and ill-observed facts in some cases, and their reckless assumption of abstract principles, having no foundation but in their own imaginations, in others—mere forms of words,

with nothing corresponding to them in nature, from which, as from mathematical definitions, postulates, and axioms, they imagined that all phenomena could be derived, all the laws of nature deduced. Thus, for instance, having settled it in their own minds that a circle is the most perfect of figures, they concluded, of course, that the movements of the heavenly bodies must all be performed in exact circles, and with uniform motions; and when the plainest observation demonstrated the contrary, instead of doubting the principle, they saw no better way of getting out of the difficulty than by having recourse to endless combinations of circular motions to preserve their ideal perfection.'

And if we were to select any age between the time of the ancients and the modern era, we should find that it would not bear comparison in scientific productiveness with the happier days on which we have fallen. We should find men busy with alchemy rather than chemistry, with astrology rather than astronomy, with magic and mystery rather than with the objects of sense, with dreamy theories rather than sober facts, taking more care to be subject to great masters and authoritative schools of learning than to pay homage to Him who holds every individual responsible to 'get wisdom and

understanding,' to 'prove all things and hold fast what is good.'

In estimating what science owes to the inductive method, the impression gained by a general view of our present scientific position may be strengthened by singling out conspicuous instances. Take as examples the science of astronomy, as one of the grandest and most elevating to the human mind, as it unfolds to us the stupendous works of the Creator; and electricity, as one of the most useful in its application to meet the daily wants of the multitude.

Uncertain as we are with regard to the number of centuries during which the Chinese, Indians, Egyptians, and Chaldeans existed before the Christian era, all history records their possession of astronomical knowledge. Yet they handed down the science, if it then deserved the name, in a crude and erroneous form. Their theories would not bear the test of inductive enquiry, and through the telescope we have seen that they are mistaken and wrong. When Hipparchus (B.C. 160-145) began to collect observations and tried to rise to the general facts and laws of the universe, he found himself almost as one beginning without assistance, so little had been the result of all previous research, conducted as it was without

fidelity to the true method. He made maps of the stars, and arrived at the resolution of the apparent motions of the heavenly bodies into an assemblage of circular motions. But so imperfect were his means of observation that they did not show the inaccuracy of the assumed circular form of the orbits of the planetary bodies. Passing on three centuries, to the time of Ptolemy of Alexandria (A.D. 130–150), we find that he has so far extended the circular idea of Hipparchus as to have circle upon circle, and to have developed the elaborate though erroneous system which was named after him. To him also is attributed the discovery of lunar evection. But from his time to that of the great Copernicus (1472–1543), a period of more than thirteen centuries, if we except the minor services rendered to it by the Arabians, astronomy was almost stationary. In the remarkable progress of this science during the subsequent three centuries—those reaching to our time—it is difficult to mete out strict justice to all discoverers, but it is manifest that this period in the world's history, so short when compared with the thousands of years that preceded it, has been exceptionally fruitful in results, and that those results have been for the most part obtained by the application of the inductive method. To Copernicus has been attributed

the merit of fully stating the heliocentric view. To the telescope of Galileo (1564–1642) we must ascribe the lasting credit of first showing to every eye the accordance of that view with the facts of nature. To Kepler (1571–1630) belongs the eternal honour of having first arrived at the true orbits of planetary motion and their mathematical law. And for our own Sir Isaac Newton (1642–1727) we can claim the high honour of having crowned his other discoveries by at length arriving at the nature, principle, and measure of operation of that all-pervading force by which the great machinery of the natural universe exists and acts. As pre-eminently an inductive philosopher, his world-renowned success in this sublime branch of science is a fact of the highest significance in our argument. ‘Ascending,’ says Sir John Herschel, ‘by a series of close-compacted inductive arguments to the highest axioms of dynamical science, he succeeded in applying them to the complete explanation of all the great astronomical phenomena, and many of the minuter and more enigmatical ones;’ and further on, in speaking of Sir I. Newton’s ‘Principia,’ he says, ‘In this great work Newton shows all the celestial motions known in his time to be consequences of the simple law, that every particle of matter attracts every other

particle in the universe with a force proportional to the product of their masses directly, and the square of their mutual distances inversely, and is itself attracted with an equal force. Setting out from this, he explains how an attraction arises between the great spherical masses of which our system consists, regulated by a law precisely similar in its expression; how the elliptic motions of planets about the sun, and of satellites about their primaries, according to the exact rules inductively arrived at by Kepler, result as necessary consequences from the same general law of force; and how the orbits of comets themselves are only particular cases of planetary movements. Thence proceeding to applications of greater difficulty, he explains how the perplexing inequalities of the moon's motion result from the sun's disturbing action; how tides arise from the unequal attraction of the sun as well as of the moon on the earth, and the ocean which surrounds it; and, lastly, how the precession of the equinoxes is a necessary consequence of the very same law.'

And, as we write, the splendid results of the application of spectrum analysis are taking their place in the sober records of science. By this new instrument of inductive enquiry distant stellar bodies are brought into our laboratories,

and their natures and properties are accurately ascertained; a measure of the movement of systems is obtained, and the great sun itself becomes a familiar object of knowledge, and yields up to us the secrets of his constitution.

The indebtedness of science to the application of the inductive method in modern times may also be seen impressively by taking a single instance in which the useful arts of life have benefited immeasurably by the new movement. As, for example, in the case of electricity, as it is employed in ocean telegraphy. The objects we make use of in this department of science were known in the earliest ages, and the germinal facts upon which we build were familiar to the ancients. Aristotle and Pliny speak of the magnet; and Theophrastus, the distinguished pupil and successor of Aristotle, knew that amber (*elektron*) when rubbed gained the power of attracting to itself light bodies. In every age the thunder-storm and the aurora borealis have struck upon the senses of men, and the torpedo and the gymnotus have from time immemorial been a terror to the fisherman and the swimmer. Livy and Cæsar have recorded how the astonished soldiers of the Roman legions saw an appearance as of flames on their spearheads when they were marching, and to the still more superstitious seamen

similar electrical phenomena seen at the mast-heads of their vessels became to them objects of worship. There have always been persons also whose natural constitution specially favoured the development of electricity. Such persons, and the exceptional effects they produced, form the kernel of fact in some of the strange stories given in the chronicles of the Middle Ages.

But although the facts were known for century after century, no use was made of them. And the position of things might have remained the same for another thousand years, if men had not exchanged vague theorising for a careful interrogation of the facts of nature by observation and experiment. This is well expressed in a pleasing essay, by the lamented Dr. George Wilson, on 'Electricity and the Electric Telegraph' (1852). He says, referring to the facts we have spoken of as known in all ages, 'The phenomena we have noticed constituted the entire stock of electrical knowledge possessed by mankind from the commencement of the historic era down to the beginning of the seventeenth century. These phenomena, however, were not known to proceed from a common source, or to be related as unlike effects flowing from a single cause. The amber-force was not suspected to be identical with the lightning-

force, or both to be the same in essence with the thrilling power of the torpedo and the illuminating agency of the atmospheric meteors. Neither did any one as yet know that electricity and magnetism are sister forces, as inseparably associated as the shadow is with the illuminating body throwing it, so that the one cannot be developed without developing the other. Nor, so far as history tells, did any one improve upon the observation, made first by Theophrastus, that rubbed amber attracts light bodies, and succeed in constructing a machine by means of which electricity could be produced artificially on a large scale. So far as we know, no one even attempted such a construction. It is only within the last 250 years, and chiefly within the last fifty, that we have learned, at the hands of men recently dead, or still living, the common source of the phenomena referred to as so long known to mankind, and have been taught how to produce and to regulate electricity at will.'

A distinguished Englishman, Dr. William Gilbert (1540-1603), physician to Queen Elizabeth and afterwards to James I., is generally acknowledged to have been the pioneer in the path of modern electrical discovery. His work on magnetism, published in 1590, awakened general interest amongst scientific men. It

contains many valuable facts, and shows his skill both in observation and argument. He did not confine his attention to magnetism, but threw out pregnant suggestions with regard to other subjects, and especially in reference to electricity. The first electrical machine consisted of a globe of sulphur, which was rubbed by the hand as it revolved. This was made by Otto Guericke, of Magdeburgh, in 1670. He afterwards discovered that the hollow glass sphere he had made to contain the sulphur globe would serve the purpose better alone than when the solid mass of sulphur was enclosed. By 1730 electricians were aware that solid bodies could be divided into two classes—those that could be made to evolve electricity by friction, and those that were incapable of it. This was the discovery of Stephen Gray, F.R.S., an Englishman who was at that time giving much attention to this and kindred subjects. Charles F. Du Fay (1698–1739), an eminent French physicist, discovered about the same time that there are two kinds of electricity, which he named vitreous and resinous. From that time the men of science of different countries by turns took the lead in urging on the progress of discovery. The Germans persevered in the construction of large machines. The Dutch introduced the Leyden jar. In America, Benjamin Franklin

was busy with his kites, interrogating the skies and the storms, and learning the identity of lightning and electricity. In England, Walsh Hunter and Cavendish, by examination of the torpedo, traced the connection of electricity with animal life. While in Italy, Galvani, by observing the action in the limbs of a frog that were lying near to his electrical machine when a spark was given out, laid the foundation of that branch of electrical knowledge (galvanism) which has taken from him its name. Another Italian, Volta, after previously showing the chemical power of the electric spark, introduced in the beginning of this century the Voltaic pile named after him, and by which water can be decomposed. These earlier discoveries have been pushed to the most remarkable ramifications by Sir Humphrey Davy and Michael Faraday. But in relation to their application to the electric telegraph, the honour of discovering the influence of an electrical current over a compass-needle, in causing it immediately to change its position, belongs to Oersted the Dane. His important discovery was made in 1819. Arago, Sir H. Davy, and Dr. Seebeck of Berlin are said to have each discovered independently in the year 1820 the power of the electric current to impart magnetism to iron and steel. Within the last few years Wheat-

stone, Cooke, Morse, and others have applied these discoveries, and have introduced the machines to which every person in a civilised country is now indebted. Space and time can now be omitted from our calculations ; we can outstrip the wind itself in the rapidity of our communications. An intellectual power little short of divine has been developed. If any danger of famine or war should suddenly threaten a whole people, not a moment need be lost in preparing to send assistance from some remote part of the world. Tidings from afar of burning interest to the individual or the whole community no longer tarry on the way and leave men in painful suspense. In a moment they are flashed to their proper destination, and by the steam-printed newspaper become in a few hours the property of all. In the ocean-telegraph we have also a new and amazing engine for the investigation of the phenomena of nature. By it the observer stationed in one part of the world can obtain from hour to hour simultaneous observations of atmospheric, tidal, and astronomic changes taken at any number of chosen localities, and thus a body of information can be gathered surpassing all that earlier philosophers could possibly obtain. And by the same medium the stimulating thoughts of the advanced nations

are encircling the world, and the cable is becoming a bond of brotherhood and a cord of love.

In concluding this chapter we cannot but refer with pride and gratification to the number and character of scientific societies in existence now, whose sole object is to advance knowledge, and thus benefit mankind. It is manifest to all that these institutions have outgrown the cliqueism that may have at times marked their course, that they are ready for knowledge from whatever source it may come, that in their pursuit of it they assign the palm to the most worthy, and that an inductive spirit has gone out from them to influence every branch of knowledge and to pervade the mind of society. This has been especially the case with those learned societies that have had an intentionally popular aspect, meeting in various important centres of population, dividing their assemblies into working sections, and in their enquiries often touching upon some of the great questions of the day—such as the ‘Social Science Congress’ and the ‘British Association for the Advancement of Science.’ In the admirable character and excellent results of such institutions we see a present fruit of the Baconian method, and a preparation for a great future for true knowledge and the arts of life.

CHAPTER IV.

THAT IN PURSUING THE INDUCTIVE METHOD REGARD MUST BE HAD TO THE MORAL BASIS UPON WHICH THE MENTAL ACT RESTS.

WE propose to show in this chapter by arguments and illustrations that the mental process in inductive enquiry is dependent in part for its success upon the moral condition of the enquirer. Quintilian taught that an orator must be a good man. It might be objected that, though without religion, he might be a man of knowledge and genius, and might have a great interest in some particular subject, or be deeply moved by it, and therefore speak eloquently upon it. But it could be justly replied that if he were not a good man, another who had similar gifts and was also good would have an advantage in himself in grasping his subject and commanding his dispositions, and an advantage also in swaying his auditory and bending them to his purpose. But if this is true in oratory, it is more manifestly and certainly true

in our philosophy, where the wisdom loved is that of a Being in whom the moral is more than the mental, and the being loving that wisdom has the same moral constitution, the mental and the moral being always in combination, but the moral always holding an imperial place. No doubt there is in all minds a love of knowledge, and that in some this has become a noble passion and has sustained them in long-suffering labour and patient research. And all are pleased with the applause and the more substantial advantages that often follow scientific success. But, these incentives cannot usually be relied on to produce and sustain the philosophic life. And, to take extreme cases, none would expect to see a successful scientific career pursued by those whose powers were emasculated by vice, or whose faculties were bewildered and beclouded by anger, prejudice, or worldly ambition.

It may be readily admitted also that where there is special taste and capacity for some department of knowledge, and the life has been given to it exclusively, there will be success in that particular pursuit. Thus, for example, a man may be a good chemist without being a sincere Christian. But if we recognise the connection of the sciences, and the comprehensive and elevated views that ought to charac-

terise those who would prosecute science in its own spirit, and as it is to the Creator, we shall see that the moral basis is no unimportant element in the condition of the philosophic enquirer. And we affirm that even in single branches of enquiry, *ceteris paribus*, the good and godly man has the advantage.

The laying aside of the 'idols,' that the mind may be free for the reception of truth, is a moral as well as a mental process. Those 'idols' are in various forms monuments of human pride and selfishness. Sometimes our misleading senses may receive a homage that is false to the facts of the universe, sometimes our personal prejudices and peculiarities may be preferred to nature's broad facts, sometimes conventional beliefs and phrases may be unchallenged deceivers, and too often we are the abject slaves of masters of high pretensions, and of systems that have become imposing by the array of unenquiring adherents who age after age have received them as a tradition, without being at the pains to trace that tradition to its unsatisfactory source. As it is a matter of daily experience that something more is required than intellectual conviction to lead men to turn from what is wrong to what is right, so it is manifest that a moral work is necessary to lead men to deny themselves in

the interests of truth, and to stand alone in the search for it, and to suffer in its defence, rather than to be borne along by the multitude who are easily giving their suffrages to ancient and applauded error. To lay aside the 'idols' we have spoken of supposes that there must have been a recognition of the morally perverted condition of our nature, that this moral fact has been understood and accepted, and that willingness and power have been superinduced to desist from ignorant self-assertion, and to be taught and guided by Him who, alike in His works and His revelation, is 'the Truth.' This it must be acknowledged is moral as well as mental.

As Bacon has so well said on this part of the subject in his 'Advancement of Learning,' book i. chap. viii., 'For the unlearned man knows not what it is to descend into himself, or to call himself to account, nor the pleasure of that *suavissima vita, indies sentire se fieri meliorem*. The good parts he hath he will learn to show to the full, and use them dexterously, but not much to increase them. The faults he hath he will learn how to hide and colour them, but not much to amend them; like an ill mower, that mows on still, and never whets his scythe: whereas with the learned man it fares otherwise, that he doth ever

intermix the correction and amendment of his mind with the use and employment thereof. Nay further, in general and in sum, certain it is that *veritas* and *bonitas* differ but as the seal and the print; for Truth prints Goodness, and they be the clouds of error which descend in the storms of passions and perturbations.'

Further, to pursue inductive enquiry aright, there must be a firm conviction that there is truth lying at the root of all things, and that it is the most precious of all acquisitions. And these are moral convictions. Suppose the inner life of the enquirer is broken and contradictory, so that sometimes he is acting wisely and on a plan, and at others recklessly and without purpose, sometimes claiming a high character and honourably keeping his word, and at others revelling in the society of the worst, and shamefully speaking what is false and betraying the friends who have trusted in him. And suppose such tergiversation seems to him to be reflected in nature around him—the microcosm in the greater cosmos. Then it is manifest he lacks the principal element of preparation. What can cheer and sustain in the long race but the firm conviction that at the goal there is a prize worth winning? To the man without moral principle and purpose the utilitarian question *Cui bono*? will be a frequent

hindrance. But to the believer in truth there will be no temptation to confine himself to those pursuits that promise an immediate and tangible return, but he will be encouraged to push his enquiries in every direction, expecting everywhere to find part of that whole of truth in which every element is precious and in harmony with every other. We have referred to the extreme case of an enquirer whose moral character is irregular and contradictory; but if we suppose the case of one whose mind is in suspense with regard to the question of the existence and character of the Creator, and who is uncertain whether there is a purpose in the universe, and whether the true or the false is at the goal, whether evil or good is the master force, we shall see at once how great is the disadvantage of the position of such a student of nature, when compared with that of one who labours patiently and enthusiastically, because he is engaged in a great and noble pursuit, believing himself to be a true servant of truth, in harmony with the spirit of the world to which he belongs, and the will of his Creator, and sure of a divine reward.

And, further, man being himself personal and accustomed to find in work the expression of character and life, feels himself impelled to look at truth as springing from Him who is

true. Truth apart from a being whom it expresses is a cold and lifeless abstraction to man. The Positivist philosopher may through devotion to his system insist upon affirming that we know only the sequences of phenomena, whether mental or material, and that to see anything more is only childish superstition. But is he not himself influenced, and as we believe rightly influenced, by his underlying belief in One in whom all truth has its eternal unity? When expressing the sentiments dearest to his own heart, when uttering what he regards as his life-truths, when vindicating the unity of the plan of his own course, would he not be indignant if a bystander should describe his words and sentiments as merely a succession of phenomena, and should ignore the man in whom they inhered and whence they sprang? And is not this the grandest stimulus to patient research, and the best assurance of success, to believe that our learning is but the removal of obstacles, that we may come to know Him who is expressed in all truth, in whom it has its unity, from whom it springs, and by whom it is everlastingly maintained? Ancient philosophers, who believed in the heathen mythologies, with their deities representing antagonistic vices and virtues, must have gone forth to the study of nature with

confused and saddened minds. And the modern sceptic has the disadvantage of similar uncertainty. He lacks what would be the strongest motive, and is paralysed because the most important preliminary question is left undecided. But the godly philosopher finds everywhere the great Creator. For example, Sir Isaac Newton says, ‘God, in the frame of animals, hath done nothing without reason.’ And seeking for Him he is stimulated by the thought that the humblest element of knowledge is part of the manifestation of the greatest and best of beings, and he presses forward in the pursuit of knowledge, inspired by the expectation of finding and serving in His works his Father, and Friend, and God. There he is confident he shall find His laws, His benevolent purposes, Himself.

What we have advanced will be sufficient to show that three important elements in inductive enquiry—the laying aside of ‘idols,’ the supreme regard for truth, and the constant reference to a Divine Lawgiver—require a moral basis in the enquirer. It might also be shown that the true inductive spirit is necessarily one marked by moral excellence. What patience, docility, and perseverance will be required by one who, to master the reasonings upon which physical astronomy depends, sets himself to

learn the whole science of pure mathematics ! And, in pursuing our investigations, we shall sometimes have to wait long at the feet of Truth, paying our obeisance without recognition or response ; we may after long and difficult study make what we regard as an important discovery, and receive much commendation, and afterwards be out-distanced by some other discoverer, or even have to acknowledge that we were in error ; at other times we may after long search find that we were on the wrong track, and have to retrace our steps and set out afresh ; and at other times homage to truth may require that we should receive it from the hands of a rival or an enemy. Will the hasty, self-assertive, applause-loving spirit of the ungodly be equal to all this ? Certainly not. The inductive spirit is self-denying, reverent, patient, humble, teachable ; it is in fact a moral, Christian spirit. By it piety subserves the interests of religion, and receives for reward a greater vision of the Creator : ‘ the pure in heart are blessed, for they *see* God.’

And it is part of the experience of some that their right thinking came only by the painful way of affliction. Their subdued spirits, no longer boasting of self or of system, became Christianly teachable. Christ Himself was ‘ made perfect through sufferings.’ It is

proverbial that 'the blood of the martyrs has become the seed of the Church.' Every Christian must 'daily take up his cross.' So science has had its martyrs. All her sons have denied themselves, and by the chastisement of her childhood have been disciplined for manhood in true wisdom. The teachableness acquired in the school of affliction, reached it may be after much recalcitration, becomes exemplary to the mind of those waiting for God's light, which is necessary in every domain of knowledge. And in science, as well as in religion, it is seen that 'sweet are the uses of adversity.' In confirmation of this general view, we shall now show that the most celebrated inductive philosophers have been religious men, and that they attributed their success in a great degree to its good influence.

Roger Bacon was a devout ecclesiastic, and a friend of the celebrated Grouthead, Bishop of Lincoln. He wrote a 'Compendium of Theology,' urged the study of the Scriptures in the original tongues, and lamented over the unspiritual condition of some of the clergy in his day. Of man he wrote in his 'Opus Majus,' 'Man is incapable of perfect wisdom in this life; it is hard for him to ascend towards perfection, easy to glide downwards to falsehoods and vanities: let him then not boast of his wisdom nor extol his

knowledge. What he knows is little and worthless in respect of that which he believes without knowing, and still less in respect of that which he is ignorant of. He is mad who thinks highly of his wisdom ; he most mad who exhibits it as something to be wondered at.' And in the same work, after speaking of the extreme difficulty of comprehending even common things, he adds, 'These and the like ought to move men and excite them to the reception of divine truths. For if in the vilest objects of creation truths are found, before which the inward pride of man must bow and believe, though it cannot understand, how much more should man humble his mind before the glorious truths of God !' And of the Bible he said, 'All wisdom, as to its principle and source, is contained in the Scriptures ; of which canon law and philosophy are the development.'

Of Columbus, Washington Irving truly says, in his work 'The Life and Voyages of Christopher Columbus' (revised edition, 1850), at p. 15, 'Throughout his life he was noted for strict attention to the offices of religion, observing rigorously the fasts and ceremonies of the Church ; nor did his piety consist in mere forms, but partook of that lofty and solemn enthusiasm with which his whole character was strongly tinctured.' Only thus can we account for his

pertinacity in urging projects that seemed to others Utopian, and for his success in inducing others to give either their property or their lives to enable him to go on his remarkable voyages of discovery. A deep religious sentiment mingled with his meditations. He believed himself to be raised up by Heaven to fulfil a great mission. His discoveries were predicted, he believed, in the Scriptures. He was to carry the true doctrine to newly-discovered countries, and to add multitudes to the true Church. These convictions armed him with a courage almost divine, enabled him to stand before kings to plead his forlorn cause with unabashed countenance, and sustained him in patient expectation when his companions were sinking in despair. The divines of the University of Salamanca hoped to silence the enthusiast by quoting against him Scripture and the ancients, but he used against them their own weapons with ability and holy zeal. In his 'Personal Narrative' of his first voyage to America (translated by S. Kettell, 1827), after speaking of the discontent of the sailors in a calm, and their desire to return, and of the wind rising in that emergency, he adds, 'The rising of the sea was very favourable to me, as it happened formerly to Moses when he led the Jews from Egypt.' When at length floating weeds appeared, he

writes, 'Many thanks be to God,' and his sailors chanted a 'Salve.' In times of special danger and difficulty he reflected on his sins as the probable cause of his trials. The discovery of new countries was valued by him chiefly because he hoped for the conversion of their heathen inhabitants. When he had discovered San Salvador he threw himself on his knees and thanked God. At Hayti he solemnly set up a cross. If successful in his voyages, he says he intends, 'with the permission of the Lord,' to devote the proceeds to the recovery of the Holy Sepulchre. In a letter to Rafael Sanchez he speaks of his justice and kindness to the natives, and says that it was 'for the purpose of gaining their affection, in order that they may receive the faith of Jesus Christ,' and that his chief cause of thankfulness was the prospect of 'the coming salvation of so many people.' The journal of his voyage commences, 'In the name of Jesus Christ,' and at the end he remarks on the opposition of his enemies and on the goodness of God in delivering him. Of the voyage he says, 'The which I hope in our Lord will prove the greatest honour to Christianity ever accomplished with such ease.'

Copernicus was a grave and godly man, a canon of the cathedral church at Frauenburg. He refrained from general society, and asso-

ciated with Gysius, Bishop of Culm, and his own distinguished pupil Rheticus. But he was diligent in his ecclesiastical duties, and in employing his medical skill for the benefit of the poor. That he was no narrow bigot may be inferred from the way in which he braved the opposition of the Church in his great work '*De Revolutionibus Orbium Cœlestium.*' In the preface he says, in reference to the prejudice in favour of the false Ptolemaic system, 'Should there be any babblers who, ignorant of all mathematics, presume to judge of those things on account of some passages of Scripture wrested to their own purpose, and dare to blame and cavil at my work, I will not scruple to hold their judgment in contempt.' In his epitaph he wrote, 'I ask not for the pardon of Paul, nor entreat for the favour of Peter, but earnestly implore the same which Thou gavest to the dying thief upon the cross.'

For Sir Francis Bacon we are not about to claim a freedom from corruption which he was unable to claim for himself. Some of the charges brought against him were satisfactorily explained by himself, and his modern defenders have done for his memory all that ingenuity and eloquence could accomplish; but he himself said, 'I do again confess that in the points charged upon me, although they should be taken

as myself have declared them, there is a great deal of corruption and neglect, for which I am heartily and penitently sorry.' But we do claim for Bacon that everywhere in his writings there may be traced a devout regard to the Scriptures and the unnumbered advantages that are possessed by a mind under the influence of true religion. He has been styled 'a child of the Reformation,' and the use he has made of the Scriptures in his various writings has been shown in a volume entitled 'Thoughts on Holy Scripture, by Francis Bacon, compiled by John G. Hall, Pastor of the Reformed Dutch Church, Fort Plain, New York' (1862). In his 'Theological Tracts,' in which there are many indications of his piety, he says, 'Thy creatures have been my books, but Thy Scriptures much more.' And the devoutness of his mind finds expression in the following prayer:—'This also we humbly and earnestly beg, that human things may not prejudice such as are divine; neither that from the unlocking of the gates of sense, and the kindling of a greater natural light, anything of incredulity or intellectual night may arise in our minds towards divine mysteries. But rather that, by our mind thoroughly cleansed and purged from fancy and vanities, and yet subject and perfectly given up to the divine oracles, there may be given unto

faith the things that are faith's.' The high place religion held in his view is well seen in a passage of his 'Advancement of Learning,' book i. chap. v. He is speaking of the true purpose of knowledge. He says, 'But the greatest error of all the rest is the mistaking or misplacing of the last or furthest end of knowledge. For men have entered into a desire of learning and knowledge, sometimes upon a natural curiosity and inquisitive appetite; sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation; and sometimes to enable them to victory of wit and contradiction; and most times for lucre and profession; and seldom sincerely to give a true account of their gift of reason, to the benefit and use of men: as if there were sought in knowledge a couch, whereupon to rest a searching and restless spirit; or a terrace, for a wandering and variable mind to walk up and down with a fair prospect; or a tower of state, for a proud mind to raise itself upon; or a fort or commanding ground, for strife and contention; or a shop, for profit or sale; and not a rich storehouse, for the glory of the Creator and the relief of man's estate.'

Bacon's object in undertaking his great and laborious philosophical works was in a great degree religious. His life was much occupied

with parliamentary and judicial duties, but a high sense of his mission impelled him to compass these useful labours.

Mr. James Spedding, in his valuable and exhaustive work, 'The Letters and the Life of Francis Bacon' (7 vols.), has shown in detail what wrought in the great philosopher's mind. He meditated upon the way in which he could best serve God and benefit men. He felt that life was quickly passing, and, believing that the best thing he could do for the benefit of the world was to put men on the right method of invention, he determined to give his energies to the accomplishment of that purpose.

That Galileo was a religious man is generally admitted, although the abjuration of his belief under the pressure of the Inquisition is universally regretted and condemned. The prejudiced and unreasoning opposition with which the Romish Church met his discoveries, and the severity with which he himself was treated, might have exasperated him against religion itself. But as he loved truth, so he tried to be loyal to the God of truth. When he saw by the telescope the four moons of Jupiter, the ecclesiastics refused to believe, because there are seven apertures in the human head and seven days in the week! They charged him with opposing the Scriptures, but the charge

was unfounded; he plainly taught that the sphere of the Bible is spiritual rather than scientific, and that the testimonies in Nature and Scripture are not discordant, but univocal. Twice he was summoned to Rome, and on the second occasion his abjuration was forced from him and he was cast into prison. He had not the moral courage to die for truth, but he lived to labour in its discovery, and to brave unpopularity and persecution in its assertion and defence. Pope Urban VIII., in recommending him to Ferdinand, said, 'We find in him not only literary distinction, but the love of piety.' And when in old age Galileo was struck blind, he lamented his affliction, but added, 'So it pleases God; it shall therefore please me also.' His biographers speak of him as a man who had learned from religion to be benevolent to all, to abhor despotism, and to hold the claims of truth as paramount and final.

In Kepler piety and philosophy went hand in hand. In applying his theory to the motion of Mars he found that the circular hypothesis gave results differing from those of his friend Tycho Brahe by at least eight minutes, and, knowing the extreme accuracy of his friend's observations, he concluded that he had found in this difference the key to the form of the orbits of the planets. Of this discovery he

says, 'Since the Divine goodness has given us in Tycho an observer so exact that this error of eight minutes is impossible, we must be thankful to God for this, and turn it to account. And these eight minutes, which we must not neglect, will, of themselves, enable us to reconstruct the whole of astronomy.' And in reference to his success in reviving and correcting Copernicus's heliocentric system he says, 'I looked on it as an interposition of Providence that I should obtain by chance what I had failed to discover with my utmost exertions, because I prayed constantly that I might succeed if Copernicus had really spoken the truth.' And it seems difficult to suppose any one could have so happily combined as he did diligence in pursuing investigations and trying hypotheses, with candour in acknowledging error and readiness in giving up the most valued theories at the dictum of truth, if he had not had Divine support and a happy habit of childlike submission to the Supreme. Kepler's successes, as they arose from faith in God, so also led to His praise. He bids the unscientific man plough his fields and worship God, and says that he will be therein accepted; but he puts forth a claim for himself as one 'who both can and will praise his God for what he has by science discovered.' When

residing in Styria, a Roman Catholic persecution raged, in consequence of some irritating words spoken in the Protestant pulpits. Kepler, being a Protestant, suffered with others. In speaking of his excommunication, he says, 'In every question I take that side which seems to me to be consonant with the Word of God.' One of his works is entitled 'On the Divine Wisdom as shown in the Creation.'

Sir David Brewster has borne testimony to the high-toned religious character of Tycho Brahe. He says, 'He was a man of true piety, and cherished the deepest veneration for the Sacred Scriptures, and for the great truths which they reveal. Their principles regulated his conduct, and their promises animated his hopes. His familiarity with the wonders of the heavens increased instead of diminishing his admiration of Divine wisdom, and his daily conversation was elevated by a constant reference to a superintending Providence.' When he was dying 'he expressed an anxious wish that his labours would redound to the glory of his Maker, to whom he offered up the most ardent prayers.'

Of the prevailing piety and habitual devoutness of Sir Isaac Newton it is scarcely necessary to give proof, as it is generally admitted. He was urged by some of the highest dignitaries

in the Church to enter its pale, but preferred doing good as a layman. And as in nature he went beyond other men, so in the study of the other book of the Creator he was impatient of the control of the thoughts and phraseology of human creeds. Sir David Brewster, in his elaborate memoirs of Sir Isaac Newton, has depicted the great philosopher as an earnest Christian. The filial affection he showed to his mother during her last illness at Stamford seemed to spring from a stronger source than natural religion. Much of his attention was given to the interpretation and exegesis of the Scriptures, and he wrote on the prophecies of Daniel, and on the Apocalypse, and on some disputed passages of Scripture, and some theological treatises. His distinguished biographer claims for him that he believed in the Trinity, though his orthodoxy has been called in question by others. It is on record that he devoted a sum to be spent in distributing Bibles amongst the poor. When Dr. Richard Bentley was in 1692 preparing his celebrated Boyle Lectures in reply to Hobbes, and was endeavouring to prove the existence of the Creator from the evidences of design in the creation, he corresponded with Newton, who sent him valuable replies, to which he was much indebted. In one of these Newton says that

when he wrote the third book of the 'Principia' 'he had an eye upon such principles as might work, with considering men, for the belief of a Deity.' On one occasion, in 1714, having dined with M. Deslandes, author of 'A Critical History of Philosophy,' Newton proposed that, instead of drinking the health of kings only, they should drink the health of all honest persons, to whatever country they belonged, and said, 'We are all friends, because we unanimously aim at the only object worthy of man, which is the knowledge of truth. We are also of the same religion, because, leading a simple life, we conform ourselves to what is right, and we endeavour sincerely to give to the Supreme Being that worship which, according to our feeble lights, we are persuaded will please Him most.'

Newton's life seemed to his associates a constant lesson in practical piety. Sceptical philosophers, who ventured to treat the Scriptures with levity in his presence, met with his severe rebuke, and while the most difficult questions in natural science were being brought to him for solution, the still more important questions affecting the eternal happiness of the soul were confidently referred to him, as one who could teach from his own experience, and as one who was a sympathising and skilled

spiritual physician. The distinguished Huygens, of the Hague, wrote to him, 'I thank God that my soul is extremely quiet, in which you have had the chief hand.'

Dr. Morland, a Fellow of the Royal Society, wrote, 'Sir, I have done, and will do, my best while I live to follow your advice, to repent and believe. I pray, often as I am able, that God would make me sincere, and change my heart. Pray write me your opinion whether, upon the whole, I may die with comfort.'

The humility of the great philosopher may be best expressed in the oft-quoted words spoken by him when near his death:—'I do not know what I may appear to the world, but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me.' Of his generous readiness to recognise and honour the services of others to science we have already given proof in a previous chapter. It is true he did not avoid collision with his distinguished compeers, and he was accustomed to vindicate his claims with force, and even asperity. But he shrank from the extreme deference paid to him by those who regarded him almost as a superior being. To

himself he appeared as a dependent man, standing on the common level. Thus, in replying to Robert Hooke, he says, 'You defer too much to my ability in searching into this subject. What Descartes did was a good step; you have added much several ways. . . . If I have seen farther, it is by standing on the shoulders of giants.' In his daily life he was temperate and abstemious, indifferent to luxury and indulgence and the minor pleasures of society, while occupied in his absorbing labours and ennobling pursuits. Yet he had a heart to feel the sufferings of his needy neighbours, and a liberal hand ready to minister to their necessities. He was not negligent of public worship, and spent much of his privacy in a thorough and devout study of the Scriptures. Mr. Conduitt says of his closing days, 'The book which was commonly lying before him, and which he read oftenest at last, was a duodecimo Bible.' Truly is it said of him in the epitaph at Westminster Abbey,—

NATURÆ, ANTIQUITATIS, S. SCRIPTURÆ
SEDULUS, SAGAX, FIDUS INTERPRES,
DEI OPT. MAX. MAJESTATEM PHILOSOPHIA ASSEBUIT,
EVANGELII SIMPLICITATEM MORIBUS EXPRESSIT.

To conclude this chapter, what name can be more relevant, or deserving of a place, than that of Michael Faraday, the great scientific

light and honour of our age? Whence but from a religious life could have sprung patience so unwearied as his, or a fidelity to truth such as distinguished him, or so firm a conviction of the value of each part of truth and the unity of the whole? By his family and his best friends he was most honoured for his piety, and whilst on the weekday *savans* and princes were found drinking in his wise and wonderful words at the Royal Institution, the returning Sabbath found him fulfilling a higher ministry in teaching saving knowledge to an obscure congregation of simple worshippers.

CHAPTER V.

THAT THE MORAL BASIS OF THE INDUCTIVE
METHOD IS CHRISTIAN.

M. COMTE has said, '*Toute science est en opposition radicale et nécessaire avec toute théologie.*' ('*Phil. pos.*,' tom. ii.) We have in the previous chapter not only shown the untruth of this statement, but have established the dependence of true science upon true theology. We propose in this chapter to advance from the general view of their relation to show that it is in Christianity in particular that science must find its method, principles, and spirit.

To those who believe in One God, and who, receiving the testimony of the Scriptures, see in Christianity the fulfilling and crowning of previous dispensations, and who regard its teaching as a higher form of knowledge emanating from the same Divine Mind whence all true knowledge comes, it will not be surprising to find that the higher and the lower—religion and science—have the same principles and are to be learned by the same methods. That this

is so we believe can be shown clearly and proved beyond all controversy. And of this view we find a strong confirmation in the instances of eminent inductive enquirers given in the preceding chapter. They were adduced to show that the basis of the inductive method is moral; they serve to show with not less certainty that it is Christian.

But we can go beyond *à priori* probability, and the argument from distinguished instances, to the proof to be found in the nature of Christianity itself. Aphorism lxviii. in book i. of Bacon's 'Novum Organum' is as follows:—'We have now treated of each kind of idols, and their qualities, all of which must be abjured and renounced with firm and solemn resolution, and the understanding must be completely freed and cleared of them, *so that the access to the kingdom of man, which is founded on the sciences, may resemble that to the kingdom of heaven, where no admission is conceded except to children.*' We give the author's Latin of the last clause, as we hold it to be of great weight in our argument. It is as follows:—'Ut non alius fere sit aditus ad regnum hominis, quod fundatur in scientiis, quam ad regnum cœlorum, in quod, nisi sub personâ infantis, intrare non datur.' The greatest of inductive philosophers has in these words shown that he had struck

upon the rich vein we are discoursing of, and to which all future ages will return for the wealth of wisdom and knowledge. No doubt he had in view, as he wrote, the words of the Great Master, given in Matthew xviii. 2, 3. The disciples were contending upon the subject of who should be the greatest in the kingdom of heaven. 'Jesus called a little child unto Him, and set him in the midst of them, and said, Verily I say unto you, Except ye be converted, and become as little children, ye shall not enter into the kingdom of heaven.' The occasion was one of great moment. The character of this kingdom was likely to be misunderstood by those who were to proclaim it to man. He gave a decisive deliverance upon the subject, one that in various forms He often repeated, and by which we believe the true method of entrance to knowledge and life in the worlds of nature and divine grace is once and for ever determined.

One of the grand peculiarities of Christianity is that the unit it reckons with is the individual man, and this idea lies at the foundation of the inductive method. The Bible magnifies the importance of the individual man. It is not an account of elaborate systems and ideal republics, but a history of the work of the 'God of Abraham, Isaac, and Jacob.' Recording the conduct of many whose names are given, and

the consequences of that conduct, it above all shows the importance of the individual in that the whole race suffer the consequences of the sin of the first Adam, and derive some benefit from the salvation of the second. Aiming at general advantages to society, and recognising the value of ecclesiastical arrangements which affect numbers, the ordinary manner of address of the Gospel is, 'What shall it profit a man if he shall gain the whole world and lose his own soul?' 'Except a man be born again, he cannot see the kingdom of God.' Saul met on the way by Jesus Christ was thus addressed: 'Saul, Saul, why persecutest thou Me?' The Divine Redeemer being Himself a man, combining in Himself our nature with God's, and His life-work being the manifestation of a perfect humanity, and at the same time the provision of redemption for us by a suffering death, men cannot receive Him without being made to stand apart.

It is no longer possible to be confused in the multitude and to go with the multitude. When a man first spiritually confronts Christ, he is made to feel his own personal responsibility, his spiritual capacity, and his sinfulness and need of change, the last element being in some instances for a time the most powerful. It was thus with Peter, when he said to Christ,

‘Depart from me, for I am a sinful man, O Lord.’ The philosopher and the intelligent lover of his species will regard this effect of Christianity as of the greatest value to man in its relation to his spiritual and eternal interests. It is not less valuable to man in his scientific pursuits. Individualisation saves individuals, and is the only effectual power to bring to an end the otherwise interminable reign of erroneous systems and ancient prejudices. For a man, without regard to the multitude, or to systems and schools, to ‘prove all things and hold fast what is good,’ and ‘to be fully persuaded in his own mind,’ requires such boldness and perseverance as are seldom met with. But it becomes possible, and a permanent duty to many, by the principles and teachings of Christ. And what is more essential to scientific success, what has been crowned with greater results, than the individual investigations of those who intelligently interrogated the facts of nature with a deep sense of personal responsibility and capacity? The hopes alike of the scientific and religious worlds depend upon the increase of the number of such men. Generations of pigmies will continue to see around them only the dim shadowy systems of their predecessors: *men*, having come to know themselves as such, will gaze with unclouded vision on the works of

the Creator, and, faithful to themselves and to His work, will know and become.

Not less important to the scientific enquirer is the humbling view of his actual condition given to man by Christianity. And it is the more so because it is always associated with the teaching of the infinitely wise and holy nature of the Creator. In relation to the great problems of the universe, we are as those who search in the midnight with a flickering taper, whose slender flame is once and again threatened by wintry gusts. If we work in Nature's wide domain, ignorant of the imperfection of our own nature, and without being cheered by the knowledge of the character and purposes of the Creator, we shall be incessantly perplexed and discouraged. How shall we be patient and persevering, in spite of a thousand failures and disappointments, if we have no such knowledge of our present condition as to explain one such failure? How shall we be encouraged to pursue our investigation if we have no such knowledge of our Creator as to lead us to believe there is a wise and benevolent plan, though we have not at present discovered it? But the Christian view of the present condition of our nature will explain our temporary non-success, stay our anger and impatience, and sustain us with a good hope, till in the end we succeed.

For a man to become a Christian is to be 'as a little child,' and to become a true and successful student of nature it is essential that we obtain a childlike disposition. In each case there must be the bringing up (*ἐν παιδείᾳ καὶ νοουθεσίᾳ Κυρίου*—Ephes. vi. 4) in the training and admonition of the Lord. For we recognise Him as both Creator and Redeemer, ruling alike in the kingdoms of nature and grace, and find the same principles applicable in both, and in both we regard them as His.

In the child the opening growing powers have an appetite for knowledge which grows by what it feeds on. Prompted by natural curiosity, the young enquirer passes from object to object, and, as the bee rejoices to return laden with honey from many flowers, so learns the delight and advantage of knowing. And so powerful are the incentives, and so rapid is the progress, that it has been said that in the first few years of our life we acquire more than half the whole sum of our knowledge: the numerous remaining years only sufficing to double the knowledge obtained at the threshold of our course. And in entering upon the Christian life childlike teachableness is necessary. Many great truths have to be learned, and an experience has to be gained, such as would be impossible to the indocile or the

indifferent. And to those seeking true knowledge in any of its numerous departments, what is more important than to lay aside the pretensions to knowledge often assumed without reason by the adult, and to possess the child's thirst for knowledge, and his willingness to receive it and delight in it?

Simplicity, too, is characteristic of the child, and essential alike in entering upon the Christian life and in the search for all true wisdom. The adult looks with an eye jaundiced by prejudice. He is influenced by his education and associations. In course of time he has obtained preconceived notions, which from habit derive a certain measure of authority. These mental parasites cannot be easily and in a moment cast off. The child looks with clear though uncultivated vision. The cup may poison or beneficially medicate the liquid placed in it; but where the draught is itself sweet and refreshing, most persons will choose the pure vessel that will not affect what is put in it. Such is the mind of the child to what is presented to it. We do not affirm this absolutely of the child, but as a characteristic of childhood. So the Christian requires simplicity of view and purpose. To attempt to 'serve God and Mammon'—to enthrone self with Christ—is fatal to the Christian life. And is it not in the same

way true that nothing is more necessary in the application of the inductive method than mental simplicity—self-forgetfulness ; and nothing more fatal to our success than cherishing prejudices and persisting in ‘foregone conclusions?’

Another characteristic excellence of childhood is self-distrust. The child appeals to others for knowledge and counsel—timidly shrinks from either affirming on its own authority, or from endeavouring to give reasons for its belief or action. Weak and uninitiated, the child looks with amazed and enquiring gaze upon the world of wonders around it. Of yesterday, it walks amidst the monuments of ancient wisdom, unable to decipher the strange characters upon them, yet much desiring one that could read and interpret. And the Christian in entering upon his new position finds the key of it in denying the self that has been too long asserted, and thus reverts to a condition in which teaching and trust are possible. So the wisest of men, when desiring wisdom for judgment and government, thus appeals to God : ‘I am but a little child : I know not how to go out or come in’ (1 Kings iii. 7). This element of distrust is the complement of that consciousness in the individual of capacity and responsibility of which we have already treated. Who will not admit that it is essential to success in scientific

enquiry that there should be an openness to correction and conviction such as would find expression in the words, 'I am but a child'—a learner, with limited powers, liable to a thousand errors, advancing with tottering steps, and often falling in my first attempt to walk in the ways of wisdom? This is the spirit Christianity inculcates and requires.

In a child self-distrust is accompanied by trust in others. The greater the distrust of self, the more dependent is the leaning upon their help. It is thus also with the Christian. Insufficient of himself even 'to think anything as of himself, his sufficiency is of God' (2 Cor. iii. 5). Though without Christ he can do nothing, having His aid he can affirm, 'I can do all things through Christ who strengtheneth me.' And in the pursuit of science, if it is important to be diffident of our own powers, and without dogmatism with regard to our own theories and the conclusions temporarily come to, it is not less important to have entire confidence in the unerring wisdom of the Creator, to feel sure there is a beneficent plan embracing the universe, and that He who knows certainly, and by whom all things have their order, beauty, and permanence, will certainly approve and reward the search of His children who thirst for knowledge of Himself and His works.

The Christian student will carry with him into the domain of general science these happy and well-founded convictions.

There is yet another characteristic of childhood that deserves to be mentioned—the idea of progressive instruction and growth in knowledge. We have already spoken of the curiosity of the child, which leads it to seek for knowledge. Upon this there follows the experience of delay and difficulty in the pursuit of knowledge. The summit of the attractive height cannot at once be reached: there must be stages in the ascent—places of halting and rest, moments of breathless weariness, to be followed by revived energies, and the cheerful renewal of the upward progress. The amusing book lies before the child, but it will be long before the alphabet is learned; then words must be spelt through, and only after long toil will sentences be mastered. So is it also in the Christian life. The believer is at first a babe in Christ, and he receives ‘the sincere milk of the word, that he may grow thereby;’ but when he becomes a man he puts away childish things—not however relinquishing those elements of spiritual good in the child that are unchangeably and eternally excellent—and grows up to the measure of the stature of a perfect man in Christ. And what is more necessary in the pursuit of

science than this childlike sentiment? It had place in Kepler, Sir Isaac Newton, and Faraday, as we have seen from their own words. They expected to fall into mistake; they were willing and ready to be corrected; their highest hope was to advance by stages, and, in response to almost infinite toil and perseverance, to be educated up to the standard of knowledge itself. And they succeeded where unchristian presumption and impatience would certainly have failed. Christ said, 'Take heed that ye despise not one of these little ones; for I say unto you, That in heaven their angels do always behold the face of My Father.' But men have despised His 'little ones,' and have proudly paid homage to the children of their own brains—their own theories; and their systems have thus become 'splendid sins,' as Augustine styles the speculations of Plato. As at first there was not room for Christ in the inn, so too often in subsequent ages there has not been found a place for Him in the laboratory of the student, the theatre of the lecturer, and the school of the philosopher. Some master minds, however, such as those we have named, have acknowledged the despised Nazarene; on His principles and in His spirit they have pursued their investigations, and with what happy results we know. They became fools that they

might be wise; they became children that they might be men; and they have had experience of the truth of God's word, that 'the meek will He guide in judgment, the meek will He teach His way.'

Further, in our last chapter we showed that man, being personal, looks on beyond the works of nature to their Creator, and rests not till he is satisfied in a personal God, and that in consequence there must be a religious basis to the true method of enquiry. We are now showing that it is Christian. 'No man hath seen God at any time; the only begotten Son, which is in the bosom of the Father, He hath declared Him.' Christ is at once 'the Alpha and the Omega, the beginning and the ending' (*ἀρχὴ καὶ τέλος*—Rev. i. 8), as it is also affirmed in Col. i. 18, and Rom. x. 4. The use of the word *ἀρχή* in its application to Christ is highly suggestive. The ancient philosophers sought for the substance, of which all special existences were but the modes, and they called it the *ἀρχή*. With Thales (B.C. 636–546), for example, it was water: not that he denied the existence of the Deity, but in his system water was the beginning of things; as in our time all phenomena might be affirmed to arise from gravitation or electricity, or some other great dynamic agent. We have already shown how Christ's

principles lie at the root of all true enquiry—that He is the beginning; we now affirm that He is also the end (τέλος) of all things. In Him every line of investigation terminates; every beam of true light finds in Him its focal centre. The end and crowning of sacrifices, of the law, of prophecy, He is also the end of all true knowledge; and, historically as well as intellectually and spiritually, He will ‘gather into one all things in Himself.’ We ask the utilitarian what is his ultimate end. He replies, ‘The greatest happiness of the greatest number.’ We reply that this excellent aim is too vague to influence individuals and to overcome human selfishness, and that there are in men sentiments of love to right without regard to happiness, of affection to persons, and of worship, which it does not meet and satisfy. We ask the Positivist what is his ultimate aim. He replies, ‘There is no God; but there is order in nature, and there are wise laws to be discovered and applied. To accomplish this is our aim.’ We ask further, ‘Is this indeed the ultimate aim?’ He replies, ‘We love and worship Humanity.* Man, collectively regarded, is an

* At p. 63 of his work, ‘The Catechism of Positivism’ (1852), Comte says, ‘We are now able to condense the whole of our Positive conceptions in the one single idea of an immense and eternal Being, *Humanity*, destined by sociological laws to con-

object of intense interest to us. We meditate a reign of philosophers—a state in which, through obedience to the laws of nature, the subjects shall live a noble life.' We reply, 'You acquire no new element to admire by the combination of men. To form a just estimate of society, you must take into account the character of the elements of which it consists; and you will find therein elements that will damp the most ardent enthusiasm. Reverting to individual heroes, you will find that they are "but men," insufficient to be an end (*τέλος*) for the race; and if you retain the collective view, you have a vague vision that will be impotent to move the sluggish minds of men, and that will not be realised without the aid of a greater Power. But in Christ there is an end in which the soul can rest, one that possesses all the elements required in a sufficient and ultimate goal, and one that has power now to make us eager in the race. As perfect man, as God manifest in the flesh, as the appointed Messiah and the second Adam, Jesus Christ presents unique and unparalleled claims. There are the strongest motives and reasons to induce us to become His followers and servants. He is

stant development under the preponderating influence of biological and cosmological necessities. This, the real Great Being, on whom all, whether individuals or societies, depend as the prime mover of their existence, becomes the centre of our affections.'

therefore an end for our study and life. In His own life and knowledge He is infinitely beyond us, and thus He is to us an end. And He alone at once appears in our nature and as its Saviour, thus appealing to our deepest sense of gratitude and indebtedness; and He is at the same time the Creator and Sustainer of all things. He is in the world, and the world is made by Him. All things are by Him and for Him.' Our reply to the question, 'What is your aim?' is, 'Jesus Christ, the same yesterday, to-day, and for ever; to know Him and serve Him, and to bring all things under His beneficent sway.' If this be accomplished, the desire of the utilitarian will be granted: in Him the greatest happiness will be possessed by the greatest number. And the end of the Positivist will be reached: in the Creator, Nature's laws and order will be found, and Humanity find her best friend in Him, who alone in the world's history has been a perfect man and man's Saviour. The end in Christ is sufficiently elevated to raise and inspire those who seek it; but, although raised above the selfish aims men have proposed to themselves, it more than all others promotes the individual interests of men, by leading them to Him who is emphatically the Son of man, and man's Saviour, while at the same time it unites them

to their Creator. It is not vague, but personal; yet to seek for it favours the general interests of society. It is not visionary, but real. In religion it has made men saints and noble martyrs; in science it makes men philosophers.

It can also be shown that the method of Christ's teaching was inductive, and that the spirit of Christianity is inductive, as we have shown that its distinguishing principles lie at the root of the inductive system. Christianity presents to us facts. It does not draw up a creed, and insist on our subscribing it, whatever our knowledge or belief may be with regard to it. Being the truth, it does affirm that we cannot with impunity reject it. But its great Teacher was 'meek and lowly.' He did not 'cry, nor lift up, nor cause His voice to be heard in the street.' He lived before men, bore His testimony, wrought His works, stated His claims, asked to be listened to and received. Some believed, and the history of their reception of the truth and of its facts is put on record for the instruction and guidance of others. And the call to believe is accompanied by a not less urgent call to every one to examine the works He did, and to search the Scriptures for their testimony to Him. Authority is shown, divine commands are given, but the ground of appeal is mainly that the things affirmed are

true and good. Position is possessed, but character is the ground of claim, and the Great Master describes Himself as 'a man that hath told you the truth.' And the proofs of divine revelation—the miraculous, supernatural, and other forms of evidence—are themselves facts submitted to us; so that Christ says, 'If ye believe not Me, believe the works.' The method adopted is thus in every way inductive. This view receives strong confirmation from the course pursued by the Apostles—*e.g.*, St. Paul, who would remain months, or even years, in one place to 'show the things of Christ' to men. His aim was not to assert authority, but to produce conviction. And his ratiocinative epistles rest on a broad basis of fact, upon which he rises inductively, and would raise his readers to the conclusions that are reached.

We have shown that the principles and method of Christianity are inductive; it remains to show that its spirit is of the same character. The spirit of a religion may be learned from the teachings and life of its founder, or from the words and conduct of its adherents. It may be difficult to conceive of an inductive method taught in a dogmatic spirit, but it is not impossible. The teacher might carry in his mind a predetermined and Procrustean measure of the way in which his method was to be enter-

tained and met, and of the result that would follow. But it was not thus in the teaching of Christianity. Of old, Elijah had said, 'If the Lord be God, follow Him : if Baal, follow him ;' and Jehovah had said to men, 'Come now, and let us reason together.' So Christ's appeal is, 'How think ye ?' His teachings were morally tentative. To the unwilling listener His parables were the bald statements of everyday occurrences, and without either interest or value. To the thoughtful hearer they were the illustrations and object-lessons of a great Teacher, and he enquired their meaning, and their application to his own spiritual circumstances. Christ required response and co-action in the mind of His followers. They did not blindly bow to authority, but were convinced and won. He asked a trial, and appealed to the result as His justification. He said, 'Learn of Me; for I am meek and lowly in heart : and ye shall find rest unto your souls' (Mat. xi. 29). 'If any man will do the will of God, he shall know of the doctrine whether it be of God' (John vii. 17). The worldly and sensual Samaritan woman of whom we read in the fourth chapter of John's Gospel met an unknown wayfarer at Jacob's Well. He was a Jew, and was therefore looked upon by her with prejudice. He reproved her for her sins, and might have by such a course

awakened her resentment. But she beheld in Him so remarkable a combination of purity, wisdom, and humility as to overcome her prejudice and opposition, and to make her, notwithstanding her immorality, and notwithstanding the prejudice of the Samaritans against the Jews, at once His advocate amongst her countrymen; and she said, 'Come, see a man which told me all things that ever I did: is not this the Christ?' She herself was not coerced, but won to Christ; and in urging her new religion she showed its spirit, asking of her countrymen only fairness in enquiry, minds open to conviction, hearts open to gratitude, love, and worship. Nor is it without significance that Paul, trained as a Jew, and whose mental tendencies may fairly be pronounced dogmatic and autocratic, should thus write: 'If any man thinketh that he knoweth any thing, he knoweth nothing yet as he ought to know' (1 Cor. viii. 2); and 'One man esteemeth one day above another: another esteemeth every day alike. Let every man be fully persuaded in his own mind' (Rom. xiv. 5). The spirit of Christianity is free from agitation and anger, extravagance and excess, pride, self-assertion, and impiety; a spirit meek and self-forgetful, patient in suffering, thoughtful and meditative, yet ready for action, persevering in

the face of difficulties, courageous in the presence of adversaries, truth-loving, devout, and reverent. And who will not admit that this is an inductive spirit, and one without which the philosopher cannot expect to succeed in his search for knowledge and truth ?

Thus seeking inductively for the facts and foundations of the inductive method, while we are confronted with the unpleasing form of Hobbes's animal selfish man, and with Bentham's calculating utilitarian, it is only in Jesus we see for the first time the perfect man, and come to the very fountain of knowledge and life.

If the limits of this treatise permitted, it would be possible to show that each of the distinguishing elements in Christ's character form a part of the mental and moral furniture required in the mind of the true scientific enquirer. For example, what is more important than that he should not be restlessly impatient to reach results and conclusions ? He requires the patience of one who is sure that the result will in due time be reached, and that it is worth reaching. Such was the patience of Jesus. To His mother, who wished to hasten the moment of His miraculous manifestation ; to the Jews, who were impatient for Him to go to the festival ; to others, who wished to make Him a king ; to Judas, who would risk all to hasten the desired crisis ; and

to all the impatient, He had but one answer : ' What have I to do with you ? mine hour is not yet come.' Were we to see how each needed element was found in Christ, and their harmony in Him, we should be prepared to acknowledge that while He is that one only Being ' in whom are hid all the treasures of wisdom and knowledge,' He is at the same time the door of entrance to the priceless and eternal riches.

When Christ was known chiefly as a spiritual teacher, the people were astonished at His works in the material world, and they said, ' What manner of man is this, that even the winds and the sea obey Him ! ' It may be regarded as confirmatory of the general view of this chapter that Christ made so much use of external nature by way of parable or analogy in His teaching, and that He wrought so many miracles. Perhaps also it might be shown that there are special teachings of His which were designed to be of the highest scientific value. For example, in modern science much has been accomplished by beginning with the small—the cell or the monad in physiological researches ; the planet, or even its moons, in the investigation of the wide domain of astronomy. So Christ taught us to consider the lilies, how they grow, and that not a sparrow falls to the ground without our Father's notice ; and in

many ways He urged the far-reaching importance of particulars and individuals. Again, much has been accomplished by finding unity in diversity—some commanding principle to which multiform phenomena can be attributed. So Christ sums up the law and prophets in love. He tells His disciples that one is their Master, and all they are brethren. He says that if He be lifted up (*i.e.*, crucified), He will draw all men to Him. A thousand confusions may have been or may be, but His cross will be the one centre to which all must come for order and life. *Stat crux dum volvitur orbis.* These views are pleasingly adumbrated in a small treatise, entitled ‘The Treasures of Wisdom; or, Thoughts on the Connection between Natural Science and Revealed Truth: with an Essay on the Analogy between Mathematical and Moral Certainty’ (1855), by the Rev. T. R. Birks, M.A. These instances are not advanced as necessary to our main argument, but as confirmatory of it, and they may be regarded as corollaries to it.

CHAPTER VI.

THE APPLICATION OF THE INDUCTIVE METHOD
TO THE SCRIPTURES.

WE have already endeavoured to show that science has received the very greatest advantages from the application of the inductive method, and that the true foundation of that method is taught in the Scriptures, and that its spirit and principles are also there inculcated and illustrated. We now propose to urge the importance of the application of that method to the Scripture facts and teachings themselves, and to illustrate the manner of that application. It may be objected to this part of our whole argument that, although much advantage has arisen from the application of this method in the domain of science, yet we cannot argue therefrom to its application in Scripture, because the cases are not parallel. We reply that in the main elements they are parallel, and that the points of difference are not against the application of this method, but in favour of it. In each

case numerous facts are presented to us unsystematically. In the wild but beautiful garden of nature, the trees and flowers are not found grouped together in their classes and orders, yet in the tangled wood and in the most varied herbage these classes and orders exist and can be discovered, and are the means of progress in botany and arboricultural knowledge. So in the Scriptures the facts are presented in different ways by events or by rites full of typical or symbolical meaning, by obscure prophecies, by historical records, by parable and proverb, by incidental allusions, or by argument and appeal. The indifferent who do not recognise their privilege and responsibility in possessing Revelation, and who do not apply their mind to the search for the meaning of its teachings, have no prospect of understanding them or being benefited by them. They are addressed to those who search: 'He that hath ears to hear, let him hear.' As in nature the enquirer is sometimes staggered by seeming contradictions, and has often to labour to reconcile phenomena that are apparently antagonistic, so the Biblical student meets with facts and statements that at first sight appear to be incompatible, and finds his attention aroused and his mind stimulated by the startling paradoxes and question-provoking parables

employed. In the use both of science and Scripture the Creator presumes upon the faithful use of the powers entrusted to us, and leaves the unfaithful to the consequences of their culpable neglect. And in the study both of science and Scripture we meet with single facts from which the mind feels itself impelled to rise to great principles and wide generalisations.

The two departments differ in their relation to the inductive method in the following respects. In science we are uncertain with regard to what appear to us to be ultimate facts. Extended powers of investigation reveal to us more elements in nature than we knew before. The atom supposed to be irreducible is found to be capable of a further analysis. The secret force is found to be but the shell containing as its kernel a more subtle and interior power, or it is removed from its temporary isolation to come under a higher generalisation, and to be known as one of a class of powers. But in Scripture, being the work of the Divine Mind, which knows perfectly and eternally, we have reason to believe we are at once presented with facts and principles that are not temporary and imperfect, like the changing objects and half-truths of human science, but unchangeable, perfect, and ultimate. And in Scripture

the facts are accompanied by explanatory statements and authoritative affirmations which are wanting in the study of the phenomena that are the objects of natural science. But it is manifest that both these differences are in favour of the application of the inductive method to Scripture. They are incentives to its application, and give a well-founded hope of still greater success than has attended it in the world of science.

Another objection to the course we propose is thus expressed in 'The Philosophy of Religion,' by J. D. Morell, A.M. (1849):—At p. 380 the author says, 'Already is it seen that the true advancement of theology does not depend so much upon any logical or purely inductive processes applied to Scriptural data, as upon the clearing of our religious intuitions and the higher development of our whole religious consciousness. Thus, as a higher and more spiritual philosophy advances, the arena of theological research will be removed more and more from the region of these mere mechanical and inductive principles, and the main efforts of theologians be directed to the development of those lofty spiritual intuitions in which Christianity, as a religion, essentially consists, and by the light of which alone we can interpret the language either of nature or revelation.' In reply

to this objection, we may state that it could have no force if the objector had not given a narrower sense to the word 'inductive' than we have given in this argument. Holding that the intuitions of the mind are important facts presented for the inductive process to operate with, and that it is of the greatest importance that the mind should come to the study of Scripture without the disease and moral obliquity of prejudice, and in the healthy exercise of its spiritual powers, we find ourselves at one with the author in several of the principal statements in his work, and that his objection does not weigh against the course we are taking.

And if it be urged that there is no room for the application of the inductive method to the Scriptures, because they consist of the direct teachings of God, we reply that we have already shown that much of the knowledge obtained from the Scriptures is learned from the facts there presented unsystematically, just as we have to learn of the facts of nature. And that there is a strong necessity for the application of this method may fairly be argued from the uncertainty of many minds on Christian teaching of the greatest moment, and from the unfruitful and injurious polemical strifes that have been so long carried on by those who have not

availed themselves of the advantages of the inductive process.

The late Bishop Hampden, in his Bampton Lectures on 'The Scholastic Philosophy,' gave prominence to the view that in the Scriptures facts are the objects of thought. In the vindictory introduction to the later editions of his work he says (p. xli), 'Nothing was further from my thoughts than to say that Christianity is made up wholly of mere events, and has no doctrinal truths in it. I have wished only to point out strongly a great characteristic of our religion, by which it is distinguished from all other religions professing to have their sacred books. Our revelations, we may say, were not the literary work of some sage or legislator, or put forth as a mere writing or collection of writings; but they are a series of historical revelations, given at different times, and in different manners, and by different messengers, each for its special purpose, in connection with what was then passing in the world; and yet all having reference to one great evangelical purpose. Not so, for example, the Korân. Here is the work of one man, dealt forth to the world by himself as so many divine communications to him, and having no connection in its parts with the history of the world.'

The father of the inductive method in later

times, Lord Bacon, held the Scriptures in the highest veneration, as we have seen by his words already quoted (*vide* p. 80). He made renderings of some of the Psalms, and speaks of sacred knowledge as ‘that learning which both the former times [Greek and Roman] were not so blessed as to know, sacred and inspired Divinity, the sabbath and port of all men’s labours and peregrinations.’ And in the compilation already referred to, ‘Thoughts on Holy Scripture by Francis Bacon,’ the numerous references to the Scriptures in his writings are brought together. Their number is great, and he makes use of Scripture inductively in the manner we are recommending. And in book ii. chap. xxv. of ‘The Advancement of Learning’ he seems to us to give his high sanction to the precise course we are arguing for. The passage is as follows:—‘In perusing books of divinity, I find many books of controversies, and many of commonplaces and treatises, a mass of positive divinity, as it is made an art: a number of sermons and lectures, and many prolix commentaries upon the Scriptures, with harmonies and concordances. *But that form of writing in divinity which in my judgment is of all others most rich and precious is positive divinity, collected upon particular texts of Scripture in brief observations; not dilated*

into commonplaces, not chasing after controversies, not reduced into method of art; a thing abounding in sermons, which will vanish, but defective in books which will remain, and a thing wherein this age excelleth. For I am persuaded, and I may speak it with an *absit invidia verbo*, and no ways in derogation of antiquity, but as in a good emulation between the vine and the olive, that if the choice and best of those observations upon texts of Scriptures which have been made dispersedly in sermons within this your Majesty's Island of Brittany by the space of these forty years and more (leaving out the largeness of exhortations and applications thereupon) had been set down in a continuance, it had been the best work in divinity that had been written since the Apostles' time.' Who shall say how much Lord Bacon himself owed to the inductive processes employed by the eminent divines here referred to? It may be that the lessons on method science is bringing bringing back to the pulpit were first learned there.* We have shown that the method of the

* In 1616 Dr. Richard Sibbes was appointed to the preaching of Gray's Inn, London, where Lord Bacon heard him. Rev. A. B. Grosart in his admirable life of Dr. Sibbes, in vol. i. of his Complete Works (1862), has the following passage on their association:—'At the date of Sibbes's appointment, the greatest of all the names enumerated, Francis Bacon, had "chambers" in Gray's Inn; and, after his fall, was a permanent resident. When

Scriptures is inductive : there were not wanting divines in the period he refers to, and to whose discourses he listened, who had learned that method in them, and were highly skilled in raising great and universal principles from the clear statements of single texts. To a mind like Bacon's a hint would suffice. A single discourse may have thus been the parent of the 'Novum Organum.'

it was dark with him, he had Sibbes for his "preacher." Am I wrong in thinking that the touching appeal of the stricken Lord Chancellor to his peers, recorded by every biographer, "I am a *bruised reed*," may have been a reminiscence of the golden-syllabled words which he had heard from the "preacher" at Gray's Inn? I know not that the author of the *Bruised Reed* is once named in all Bacon's writings, but then neither is Shakespeare. Still, I cannot help rejoicing that, in his closing years of humiliation and penitence, while he was building up the Cyclopean masonry of his "Novum Organum," he had Richard Sibbes to lift his thoughts higher. I delight to picture to myself the mighty thinker and the heavenly preacher walking in the "faire gardenne" of the Inn, holding high and sanctified discourse. I fancy I can trace the influence of Sibbes on Bacon, and of Bacon on Sibbes. There are in Sibbes many aphoristic sayings, pregnant seeds of thoughts, felicitous "similies" (so marked on the early margins) that bear the very mintage of the "Essays;" and again, there is in them an insight into Scripture, a working-in of its cloth-of-gold with his own meditations, an apposite quotation of its facts and words, that surely came of the sermons and private talk under the elms with Sibbes. It is something to know that two such men knew each other.' A good illustration of Sibbes's community of sentiment and illustration with Bacon is found in his sermon 'A glance of Heaven' (1638), p. 159 of vol. iv. of the edition just referred to, where he says, 'If men had had passive wits to submit to d'vine truths, and to work nothing out of themselves, as the spider out of her own bowels, there had not been such heresies in the Church.'

The period to which Bacon refers, at the close of the fifteenth century, was a time when great theological questions were agitating the minds of men, and eminent divines were not wanting to meet and answer them. The great wave of the Reformation had been felt on our shores. The great intellectual struggles between Romanism and Protestantism, and between Puritanism and Episcopacy, were just being entered upon by powerful and eager combatants. The necessity for a firm footing, in a true method, was strongly felt. And they who relied on the Scriptures for proof, knowing their advantage, were careful to build up their arguments with close-fitting and accurate workmanship, from its broad and secure basis. During that period flourished the great Reformation bishop Jewel,* whose controversial works had a world-wide reputation, and Archbishop Parker, so eminent as a collector of valuable MSS. at Cambridge, as a patron of Saxon literature, and as a Bible student, and under

* In his '*Apologia Ecclesiæ Anglicanæ*' (1562), which was translated by Lord Bacon's mother, Jewel claims for those who thought with him that 'they refer all their controversies unto the Holy Scriptures,' and 'in comparison of them set little by all other things, whatsoever may be devised by men,' and condemns those 'who prefer before them their own dreams, and full cold inventions, and, to maintain their own traditions, have defaced and corrupted, now these many hundred years, the ordinances of Christ and of the Apostles.'

whose direction the translation called 'The Bishops' Bible' was made. Then also the severe Archbishop Whitgift was carrying on his polemical contest with his distinguished Puritan antagonist Thomas Cartwright. Whitgift was master of Trinity College, Cambridge, when young Francis Bacon was a student there. Hugh Broughton, the celebrated Hebraist, was also among the preachers of the time. But perhaps the ablest and most eminent divine of that period was the 'judicious' Richard Hooker, who in his great work, 'Of the Laws of Ecclesiastical Polity,' makes almost countless references to passages of Scripture to support the different parts of his argument. And in his sermons—*e.g.*, his well-known discourse on 'Justification by Faith'—he is most careful to make it manifest that every part of his argument has its authority in the Scriptures. In the fifth book of his 'Ecclesiastical Polity,' par. 21, there is a passage in which he appears to give his sanction to the position we are taking up in this chapter, that each mind has the responsibility and privilege of going to the Scriptures, and there rising by the inductive process or suggestion of the mind from particular to universal principles of high and eternal value. He says, 'Since God, who knoweth and discloseth best the rich treasures

of His own wisdom, hath by delivering His word made choice of the Scriptures as the most effectual means whereby those treasures might be imparted unto the world, it followeth that to man's understanding the Scripture must needs be even of itself intended as a full and perfect discovery, sufficient to imprint in us the lively character of all things necessarily required for the attainment of eternal life. And concerning our assent to the mysteries of heavenly truth, seeing that the Word of God, for the Author's sake, hath credit with all that confess it (as we all do) to be His Word, *every proposition of Holy Scripture, every sentence being to us a principle*; if the principles of all kinds of knowledge else have that virtue in themselves, whereby they are able to procure our assent unto such conclusions as the industry of right discourse doth gather from them, we have no reason to think the principles of that truth which tendeth unto man's everlasting happiness less forcible than any other, when we know that of all other they are for their certainty most infallible. But as every thing of price, so this doth require travail. We bring not the knowledge of God with us into the world.'

Before illustrating the method we propose for adoption in the study of the Scriptures, it may be necessary to state the preliminary difficulties

in the way of its application. The ordinary student of the Bible may reasonably ask for the evidence that he has before him the canonical books, without addition or omission, that the text is pure, and the translation correct. He may also reasonably pause to be assured on the question of 'private judgment.' Upon all these points, except the last, it will not be difficult for him to obtain at second-hand satisfactory evidence. But the last-mentioned subject is one of great importance, and to some minds seems beset with difficulties.

In the decisions of the Council of Trent we find these words:—'In order to restrain petulant minds, the Council further decrees that, in matters of faith and morals, and whatever relates to the maintenance of Christian doctrine, no one, confiding in his own judgment, shall dare to wrest the Sacred Scriptures to his own sense of them, contrary to that which hath been held, and still is held, by Holy Mother Church, whose right it is to judge of the true meaning and interpretation of Sacred Writ, or contrary to the unanimous consent of the Fathers, even though such interpretation should never be published. If any disobey, let them be denounced by the ordinaries, and punished according to law.' It will be evident at once to the reader that if this decision be accepted,

there would be no longer any necessity for the use of the inductive method in the study of Scripture. The same result would follow if it be admitted that any Church has power to decide that there are authoritative traditions that qualify or override the teachings of Scripture, and to determine what those traditions are. It is not possible to treat fully within the limits of this treatise the subject of 'private judgment,' or the right and responsibility of each man to judge of the teachings of Scripture for himself; but the relation of this subject to the whole argument is so important that it must be briefly discussed.

And in doing so we would distinctly recognise the wisdom of seeking the help of others in studying the Scriptures, even though we should be the stoutest vindicators of 'private judgment.' In theological, as well as in other science, ages and generations assist in a progressive work too great to be embraced within the compass of the individual life. The opinions of the Fathers and the decisions of Ecclesiastical Councils are most worthy of the thoughtful consideration of the devout, and conclusions may be reached by means of the intellectual conflicts of polemics and contending schools, which may be regarded as advanced and firm footholds in our upward progress, that had not

been reached before. And of such progress individual students, working inductively, will be the best promoters. But the question is not one of help voluntarily given and received, but of responsibility on the one side and authority on the other.

To us it seems that the right and duty of 'private judgment' in matters of religion cannot be successfully argued against. In every other subject than religion we find in the results of our daily life that we are personally responsible. If we do not use our own judgment we suffer. Why then should there be a difference in the most important subject, in that which relates to our salvation and eternal life? Men who claim to rob us of this privilege, and to undertake so great a responsibility for us, must, in making their claim, deny it, as Archbishop Whately has shown. For in presenting that claim they appeal to our private judgment as to whether they are deserving of such confidence. And how can they possibly justify such a confidence? Are they divine or infallible? They are certainly not divine, and as certainly not infallible. Fathers stand opposed to Fathers, and even Councils contradict each other. This is well put by Calvin in his 'Institutes,' book iv. chap. ix. He says, 'It is now about nine hundred years ago that the Council of Constantinople,

assembled under the Emperor Leo, decreed that all images placed in churches should be thrown down and broken in pieces. Soon after, the Council of Nice, which the Empress Irene convened in opposition to the former, decreed that they should be restored. Which of these two shall we acknowledge as a legitimate Council? This character has generally been attributed to the latter, which gave images a place in the churches. But Augustine declares that this cannot be done without imminent danger of idolatry. Epiphanius, a more ancient writer, expresses himself in terms of much greater severity; he says that it is abominable wickedness for images to be seen in the temples of Christians. Would the Fathers who speak in this manner approve of that Council if they were now living? But if the accounts of historians be true, and credit be given to the acts themselves, that Council not only admitted of images, but determined that they were to be worshipped. Now it is evident that such a decree must have originated from Satan. What shall we say to their perversions and mutilations of the Scripture, which demonstrate that they held it all in contempt, as I have already proved? We shall never be able to discriminate between the numerous Councils, which dissent from and contradict each other, unless we

examine them all by the Word of God, which is the universal standard, for men and angels.' And a very practical question to each man is, whether they who undertake to relieve us of personal responsibility will also undertake the present and eternal consequences of our adopting the course they propose. We know they are unequal to such an undertaking.

If indeed, after we had made use of 'private judgment' in receiving the Scriptures, we found that they disallowed, in definite and unmistakable terms, any further use of that privilege, and that they authoritatively appointed certain men or Churches to be the rulers of our faith, that, and that alone, would justify our relinquishment of this responsibility. But not only is private judgment affirmed in many passages, but it is also the general teaching of Scripture. In passages already quoted we have seen that the Scriptures teach that religion is an individual matter, and that each man has a weight of responsibility he cannot shift off upon his neighbour. 'What shall it profit a man,' Christ says, 'if he shall gain the whole world, and lose his own soul?' Paul says, 'We must all appear before the judgment seat of Christ; that *every one* may receive the things done in his body, according to that *he* hath done, whether it be good or bad.' And his words

already quoted, 'Let every one be fully persuaded in his own mind,' seem to render uncertainty upon the subject impossible. The teaching of John, in his first Epistle, chap. iv. 1, is also decisive in its character. He says, 'Beloved, believe not every spirit, but try the spirits whether they are of God : because many false prophets are gone out into the world.' And the men of Berea were commended for trying what they heard by the test of the Old Testament Scriptures, instead of receiving it without enquiry. It is said of them (Acts xvii. 11), 'These were more noble than those in Thessalonica, in that they received the word with all readiness of mind, and searched the Scriptures daily, whether those things were so.'

The connected subject of tradition may be treated in a sentence. Scripture intimates that other teachings might have been given, but that those given are the inspired Scriptures, and are given that men might believe in Christ and have life. (John xx. 30, 31 ; 2 Tim. iii. 16, 17.) The canon closes with a solemn warning against adding to or subtracting from the last book, and this warning we believe applies by implication to all the other books. Tradition was used for a time, before the New Testament Scriptures were written, but we have the

Written Word. Other traditions are too numerous, uncertain, and even contradictory to be generally known or received as of equal authority with the statements of the Sacred Scriptures. They are condemned by Christ, who said to the Pharisees, 'Why do ye also transgress the commandment of God by your tradition?' and an instance recorded in the Gospel of John (John xxi. 22, 23), in which, early in apostolic times, tradition had even then departed from the truth, and the brethren were saying that John should not die, though Christ had only spoken of the possibility of his remaining for a time on earth, seems to be intended as a warning against placing on the same footing reports that may have suffered in transmission, and those teachings that were inspired by the Holy Spirit.

Regarding these preliminary questions as now answered, we are in a position to state and illustrate the method of studying the Scriptures we are arguing for. When the mind and heart have sought such preparation as we have before described, they are ready to come into immediate contact with Scripture facts and teachings, and may reasonably expect to rise from single facts to the reception of important principles of wide and frequent application.*

* 'What we want is a concise, sound, and judicious collection

Of what use a seemingly unimportant element in the sacred narrative may thus become we may learn from an instance in Lord Bacon's 'Advancement of Learning,' book ii. chap. xxv., where he makes the following use of the laughter of Sarah, when the angel said that, although advanced in years, she should be the mother of a child. He says, 'The prerogative of God extendeth as well to the reason as to the will of man; so that as we are to obey His law, though we find a reluctance in our will, so we are to believe His Word, though we find a reluctance in our reason. For if we believe only that which is agreeable to our sense, we give consent to the matter, and not to the Author; which is no more than we would do towards a suspected and discredited witness; but that faith which was accounted to Abraham

of annotations and observations on particular texts of Scripture; neither dilated into commonplaces, nor chasing after controversies, nor reduced into method of art, but entirely unconnected and natural. It is indeed a thing sometimes found in the more learned sermons, which for the most part do not last; but not yet introduced into books, which may be handed down to posterity. But certainly, as wines which flow gently from the first treading of the grape are sweeter than those which are squeezed out by the winepress, because these last have some taste of the stones and skin of the grape, so those doctrines are very sweet and healthy which flow from a gentle pressure of the Scriptures, and are not wrested to controversies or commonplaces. Such a treatise then I will denominate *the Emanations of the Scriptures*.'—Bacon, translation of the 'De Augmentis,' end of ninth book.

for righteousness was of such a point as whereat Sarah laughed, who therein was an image of natural reason.*

Instances might also be given from the renowned allegory of John Bunyan, 'The Pilgrim's Progress.' Bunyan wrote about half a century after the time of Bacon. He enjoyed few educational advantages, but by the force of his native genius, in happy alliance with a rich and matured piety, he has achieved the greatest success in his allegorical pieces. And it is generally admitted that his success has arisen in part from his excellent use of the Scriptures. His method was the inductive, in the hands of a plain sincere man, untrammelled with the prejudices and systems of the schools. Look-

* 'The interpretations of the Scriptures are of two sorts; methodical, and solute or at large. For this divine water, which excelleth so much that of Jacob's Well, is drawn forth much in the same kind as natural water useth to be out of wells and fountains: either it is first forced up into a cistern, and from thence fetched and derived for use; or else it is drawn and received in buckets and vessels immediately where it springeth. The former sort whereof, though it seem to be the more ready, yet in my judgment is more subject to corrupt. This is that method which hath exhibited unto us the Scholastical divinity, whereby divinity hath been reduced into an art, as into a cistern, and the streams of doctrine or propositions fetched and derived from thence.'—Bacon's 'Advancement of Learning,' book ii. p. 483, vol. iii. (Spedding's edition). Bacon goes on to complain that writers have become diffuse, weak, and erroneous in proportion as they have systematised.

ing with clear vision and open countenance on the great things of God, he saw truths of the highest and most lasting value. For example, Christian, in his answer to Mr. Hold-the-World, is made to say,—

‘If it be unlawful to follow Christ for loaves, as it is (John vi. 26), how much more abominable is it to make of Him and religion a stalking-horse to get and enjoy the world! Nor do we find any other than heathens, hypocrites, devils, and witches that are of this opinion.

‘1. Heathens: for when Hamor and Shechem had a mind to the daughter and cattle of Jacob, and saw that there was no way for them to come at them but by becoming circumcised, they said to their companions, “If every male of us be circumcised, as they are circumcised, shall not their cattle and their substance and every beast of theirs be ours?” Their daughter and their cattle were that which they sought to obtain, and their religion the stalking-horse they made use of to come at them. Read the whole story (Gen. xxxiv. 20–24).

‘2. The hypocritical Pharisees were also of this religion: long prayers were their pretence, but to get widows’ houses was their intent, and greater condemnation was from God their

judgment (Luke xx. 46-47).’ And in the same way he refers to what the Scriptures teach of Judas, and of Simon the wizard.

To take our own illustrations, suppose we are reading in the Old Testament of the suffering but noble course of Moses, or the epitome of it in the New Testament (Heb. xi. 24-6): ‘By faith Moses, when he was come to years, refused to be called the son of Pharaoh’s daughter; choosing rather to suffer affliction with the people of God, than to enjoy the pleasures of sin for a season; esteeming the reproach of Christ greater riches than the treasures in Egypt: for he had respect unto the recompense of reward.’ We may confine our attention to this instance; or we may enquire how far its suggestions square with our theories or preconceived notions; or we may, as we recommend, let our minds rise to the reception of a great salvatory principle, applicable to the character and daily life of every man—that of denying self to follow Christ. Or, reading in the New Testament (Luke vii. 50), ‘And Jesus said to the woman, Thy faith hath saved thee; go in peace,’ we may, even as the unprejudiced philosopher has from some single fact in nature risen to the reception of some great law that is universal in its appli-

cation, so rise inductively with certainty to the recognition of the inexpressible value in the Christian system of personal faith.

Up to this point in this treatise we have been engaged in endeavouring to lay securely the foundation of the inductive method, and to show that it is taught in the Scriptures and applicable to them. But there is no intention of overlooking the importance of rearing the superstructure. The great champion of the inductive method, Lord Bacon, has, in book ii. of the 'Novum Organum,' devoted much space to what may be called the elaboration and machinery of his method, and with almost infinite pains has given facts illustrative of his numerous 'prerogative instances.' And although his eminent critics have objected to his classification, and the immediate results of his own minute investigations were small, yet it is impossible to follow him through his careful course and to catch his spirit without becoming a patient and cautious investigator, and an enemy to hasty generalisation. And although his instances are usually taken from material nature, yet under the class of 'constitutive instances' he gives as an example one of a different kind, that of the memory, which can be assisted by order or distribution, and

by topics or commonplaces; and it is evident from his writings that he regarded the inductive method as applicable to mental as well as to material phenomena, to the teachings of Scripture as well as to the facts of nature. And the student of Scripture, if he do not adopt and apply all the twenty-seven species of 'prerogative instances' Bacon has enumerated, will yet find abundant scope for the careful 'comparing of spiritual things with spiritual.'

For example, to take the *instantia crucis*, a name borrowed from the cross erected where two roads meet, and by which the uncertain traveller is guided aright. One of the several examples he gives is as follows:—'Take a clock moved by leaden weights, and another by a spring, and let them be set well together, so that one be neither quicker nor slower than the other; then let the clock moved by weights be placed on the top of a very high church, and the other be kept below, and let it be well observed if the former move slower than it did, from the diminished power of the weights. Let the same experiment be made at the bottom of mines worked to a considerable depth, in order to see whether the clock move more quickly from the increased power of the weights. But if this

power be found to diminish at a height, and to increase in subterraneous places, the attraction of the corporeal mass of the earth may be taken as the cause of weight.'

Will there not be many instances in the study of the Scriptures in which we shall find it advantageous to apply this test? For example, we wish to learn what place in worship should be given to ritual in Christian times. From the Old Testament we gain the impression that under a system appointed by God the ritual was elaborate and full of meaning, and that it could not with impunity be neglected. We also read in the New Testament in the words of Christ Himself that He has not come to destroy the law, but to fulfil it, and that not one jot or tittle of the law shall fail till all is fulfilled. But, on the other hand, we find that Christ inveighs against formalism, and censures those who made of none effect the commandment of God through their traditions, many of those traditions having respect to strictness in ritualistic observances. We also find Christ calling for spiritual worshippers, and making light of localities by saying (John iv. 21), 'Woman, believe Me, the hour cometh, when ye shall neither in this mountain, nor yet at Jerusalem, worship the Father.' Uncertain whether on the

one hand we are to associate with the few rites of Christianity a ritualism Jewish in its preciseness and solemnity, or whether, on the other, we are to observe its rites in a spirit harmonising with its generally informal and spiritual character, we ask for an *instantia crucis*. We find it in the case of the Galatian Christian Church. Paul, who addressed them, was a Jew; it was a transitional time; if in any case excuse might be made for Judaising, it might have been made then. But the Apostle in the most unqualified manner resisted the efforts of the Judaising teachers, who were trying to entrench themselves in arguments drawn from the Old Testament, as Olshausen remarks. In the course of his uncompromising argument the Apostle says, ‘After that ye have known God, or rather are known of God, how turn ye again to the weak and beggarly elements, wherunto ye desire again to be in bondage? Ye observe days, and months, and times, and years. I am afraid of you, lest I have bestowed upon you labour in vain.’ And farther on in the Epistle he says, ‘For in Christ Jesus neither circumcision availeth anything, nor uncircumcision, but a new creature.’

The position taken up in this chapter receives confirmation from the following extract from the

work of Bishop Hampden already referred to (introduction, p. xlix):—‘If we would learn what the Holy Spirit would have us learn from the Bible, if we would test what we have received as divine truth by the Bible, we must study the sacred records as we study nature. The method of induction is to be used here, as there. Observations are to be classed. Irrelevant matter is to be excluded. We are to proceed step by step, in rising to the truth as it is written, and in examining the Scriptures whether the things be as we have been taught. This, however, is a very different process from taking a proposition, and anatomising it, and arguing that such or such must be a revealed truth because it is logically deducible from that proposition. Conclusions so obtained depend on our definitions of terms, or the sense which we choose to give them, and are therefore only hypothetically true, in the same manner as mathematical theorems. But if we follow the method of induction, and confine ourselves to facts, excluding all hypotheses, we shall arrive at absolute truth,—truth not dependent on phraseology. By this method, the doctrines obtained from St. John’s Gospel, or any other book of the Bible, would have equally resulted, had the inspired writer employed an entirely different mode of expres-

sion. For thus the truth is not regarded as essentially vested in the mere *logical* connection of terms; but texts are compared with each other, and referred to the spirit and meaning of the particular book in which they occur, as well as of the Bible at large, and connected with the whole scheme of Divine providence and grace.'

CHAPTER VII.

THAT CHRISTIANITY HAS SUFFERED FROM THE
USE OF METHODS OTHER THAN THE INDUCTIVE.

IN the third chapter it was shown that science had suffered from the neglect of the inductive method during many ages. The theme of this chapter is the injury Christianity has suffered in all its principal eras from the same neglect. The great problem of the relation of philosophy and religion has not been overlooked nor regarded as unimportant, but, on the contrary, religion has suffered from an excessive and misdirected attention to this great subject. Men of the greatest genius have been entangled and exhausted in the hopeless attempt to apply human philosophies and traditions to the Christian system, vainly attempting to put the new wine into the old bottles. The method itself has been at fault; the perseverance and ingenuity of the men have been beyond praise. If we turn to the times of the Fathers, or to the centuries in which the Schoolmen flourished, we are confronted with great names. We meet

with men of eminent piety, strong native genius, and extensive erudition, distinguished for their dialectic skill, their subtilty in making nice distinctions, and their comprehensiveness in forming systems. And when we see vast and elaborate theologies and philosophies preserved in their integrity from age to age, and attempts made to improve them as they pass to worthy inheritors, like estates that, descending to good heirs, are both preserved and become more productive, we say with admiration that 'there were giants in those days.' But the result was not equal to the labour. Blinded by the erroneous methods of heathen philosophers, or by Jewish traditions and cabalistic interpretations, or by Egyptian allegorisation, or by an undue deference to the decisions of the early Fathers, the leaders of religious thought, notwithstanding their commendable efforts, made little progress, but moved wearily in the circle beaten by the steps of their predecessors.

So early as the times of the Apostles it was necessary to caution Christian teachers and disciples against the supposed necessity of harmonising the Scripture teachings with acknowledged traditions and philosophies, and to insist on the paramount claims of the inspired writings, and the superiority of the philosophy evolved from them, over any that could be

brought from without and applied to them. Paul in writing to the Colossians says (Col. ii. 8), 'Beware lest any man spoil you through philosophy and vain deceit, after the tradition of men, after the rudiments of the world, and not after Christ.' And in writing to Timothy he cautions him to avoid 'the opposition of science falsely so called' (1 Tim. vi. 20). The Apostle does not in these passages speak against philosophy or science, but only warns against that which does not deserve the name, but has its weight from tradition, and may be classed with deceit, and urges the higher claim of Him in whom are 'hid all the treasures of wisdom and knowledge.'

It is familiar to the student of the early history of the Church that the apostasies he warned against actually took place. And the root of these apostasies was unfaithfulness to the inductive method. Philo, who was living in the time of Christ, was a native of Alexandria, where he thoroughly imbibed the Egyptian method of allegorical interpretation. He was intent also on seeking the reflected light of the inspired testimony of his great master Moses in the teachings of the leaders of thought in the schools of ancient philosophy, among which he gave the first place to that of Plato. Such biases on his part, and on the part of other men-

of influence, in those days prepared the way for the heresy of the Ebionites, and prevented the inductive use of the Scriptures, and the payment to them of the undivided homage they demand. Blindly attached to the traditions of their fathers, the Ebionites withheld from the Messiah the divine honour due to Him, and presumptuously revised the Gospel narrative to conform it to their preconceived and prejudiced notions.

Not less manifestly were the Gnostic errors of the early ages of the Christian era due to the neglect of the inductive method. Dr. Edward Burton in his Bampton Lectures on this subject attributes the Gnostic system to three principal sources. He says, 'We find in it the Platonic doctrine of ideas, and the notion that everything in this lower world has a celestial and immaterial archetype. We find in it evident traces of that mystical and cabalistic jargon which, after their return from captivity, deformed the religion of the Jews; and many Gnostics adopted the Oriental notion of two independent co-eternal principles—the one the author of good, and the other of evil. Lastly, we find the Gnostic theology full of ideas and terms which must have been taken from the Gospel; and Jesus Christ, under some form or other of *Æon*, emanation, or incorporeal phantom,

enters into all their systems, and is the means of communicating to them that knowledge which raised them above all other mortals and entitled them to their peculiar name.' Two unscriptural and injurious errors of the Gnostic system were the removal of Creation from the hands of God and the contempt put on our present bodily life. Putting aside the plain teaching of the first verse in the Bible, that Jehovah created the heavens and the earth, they chose to consider the material creation as unworthy of Him, and assigned it to an inferior being, the Demiurgus. The Scriptures represent man as made in God's image, the temple of the Holy Ghost. In them Christ says, 'A body is prepared Me.' They record with approval the burial of the body with honour, and teach of its resurrection and eternal glory in the likeness of Christ. But the Gnostic saw in the body the root of all evil, and affected to regard its pleasures with indifference, or, by a still more pernicious perversion of mind, professed to esteem its most sensual indulgences as incapable of injuring the soul. When we consider the diverse sources of Gnosticism, its imaginary and unfounded developments, which were with difficulty grasped by the ordinary mind, and its contradictory and pernicious consequences, we are not surprised that it gave rise to several

sects and promoted the unprofitable spirit of division. The cause of all these evils was the neglect of what this treatise is written to commend, the approach to the Scriptures without prejudice, and with homage and simplicity of mind to learn 'what God the Lord will speak.' Dr. Burton says on this point, 'Many persons who were called heretics in the first and second centuries had little or nothing in common with Christianity. They took such parts of the Gospel as suited their views or struck their fancy; but these rays of light they mixed up and buried in such a chaos of absurdity that the Apostles themselves would hardly have recognised their own doctrines. Such were most of the heresies in the lifetime of the Apostles; and when we come to consider the state of philosophical opinion at that period, we shall cease to wonder that the Fathers speak of so many heresies appearing in the lifetime of the Apostles.'

When we pass from sacred to profane history, to learn the progress of Christianity in the first ages, we find ourselves introduced to a state of things in immediate contrast with the simplicity of apostolical times. Instead of declaring that One is their Master, and all they are brethren, Church dignitaries are found contending for place and power. It no longer pleases them

to declare that their kingdom is not of this world; they wish for territorial rule and the co-operation of Kings and States. Their writers are sometimes spoken of as inspired, and some of their leaders receive almost divine honours. Rites are celebrated with imposing magnificence in edifices of more than palatial splendour. Instead of being persecuted, the Church, using the secular arm, persecutes those who do not bend to her authority. It was not without many protests of the best of the Fathers, and many appeals to Scripture against so great a change, that it was fully reached; but in his 'Ancient Christianity' the late Isaac Taylor has ably shown that at an early period of the Christian era some of the elements of this picture were already to be found. And whence this lamentable perversion, whose bitter fruits continue till this day, but from an unspiritual impatience with the method we are recommending—that of inductively interrogating the Sacred Scriptures and abiding by their decisions? The paganism of the ancients, as well as their philosophy, was combined with Christianity. The heathen temple with little change became a Christian church, the Madonna took the place of Venus or Cybele, the worshipper bent before an idol as of old. The chief pastor took the name and part of the dignity of the Pontifex

Maximus. Festal days and processions were as familiar as in classic times. The overshadowing grandeur of ancient paganism, the colossal monument alike recording man's need to worship and his presumptuous pride in attempting to make his own gods and his own religion, was allowed to darken the period of hope in which the light of the Gospel ought to have shone without being sullied or intercepted.

The most diverse opinions have been held as to the importance to be attached to the writings of the Fathers. Because of the errors and contradictions to be found in the voluminous works they have left, some have put them aside altogether as useless. Others have not only held them in high regard, as containing the doctrines and practices that prevailed near to the time of Christ, but have invested them with an authority scarcely inferior to that which belongs to the inspired writings themselves. But it has been ably shown in a work already referred to, Mr. Isaac Taylor's 'Ancient Christianity,' that very soon after the Apostles' times the Fathers and the early Christians had strayed into unscriptural teaching and serious error, with regard, for example, to the great meritoriousness of almsgiving and celibacy under the Christian system. And who has ever been able to adduce one iota of evidence to show that the Scripture

explanations and theological systems of the Fathers possess any more authority than that which belongs to exegesis and theology produced by men in our own day, who are equally pious, and who can profit by the scientific developments of many ages?* Yet it seems to be forgotten by some who neglect the Fathers, or take up a position of violent hostility against them, that, in its nearness to the time of Christ, their position had some advantages; that they always speak as the friends of Christ's cause; and that some of them possessed in a remarkable degree, in happy combination, piety, learning, and natural genius; and that with great perseverance, ingenuity, and eloquence they fought against their heathen foes, often turning against them their own weapons, and produced apologies for Christianity that were brilliant and masterly, though sometimes exaggerated in their statements and turgid in their style.

In harmony with our general view of this period, the late Bishop Hampden, in the work already quoted, says (lecture viii. pp. 358, 359), 'Take even the very period when the

* Origen, Augustine, and some other of the Fathers, have expressly stated that their writings cannot claim to be authoritative, but appeal to the judgment of the reader. Thus Augustine in his work *Contr. Faust.*, lib. xii. cap. v., says, '*Hoc genus literarum non cum credendi necessitate, sed cum judicandi libertate, legendum est.*'

Apostles themselves were teaching ; when the Holy Spirit Himself went about with those chosen vessels of divine truth, putting into their hearts and mouths what they should say. At this very period the most wild theories were incorporated with Christianity : the hearer of an Apostle sought to obtain from him with money the power of the Spirit, the strength itself of the Apostle's labours in the Gospel. But to come to the period of the Apostolic Fathers. Whatever praise we may assign to them for their ardour and firmness as believers, can we justly ascribe to them the merit of accurate expositors of Christian truth ? Impartiality, I think, requires us to say otherwise. Were we to endeavour, indeed, to form a system of divinity out of these writers, it would be found necessary to explain away many of their positions and expressions in order to bring them into accordance with the admitted truths of Scripture. As evidences of the essence and spirit of the Gospel, as it was handed down from the outset, they are invaluable ; as testimonies of the earnestness of individuals,—of their Christian character and Christian hopes,—the writings are also highly interesting and important : but as authorities decisive of what is *true* or what is *false* in theological statement,



they are in reality less valuable than the writings of a subsequent age.'

When we come to the point at which this subject touches our argument, and ask whether the Fathers understood and practised the inductive method, or whether on the other hand they hindered the progress of true Bible knowledge by their neglect of it, we are obliged to answer that the latter is the true account of the result of their labours. We could glean from their writings many noble passages, in which they insist on the paramount claims of the Holy Scriptures, but they were not consistent with themselves. They allowed their previous knowledge of heathen philosophies and religions, or the allegorising method of interpretation they had previously acquired, so to influence them in the use of the Scriptures as to deprive them of their plain meaning, and to emasculate them of their special force. Or, yielding to a carnal love of place and honour, they ranked one another with the inspired, and so gave colour to that which was afterwards sanctioned by Papal authority, that Scripture must be understood according to the unanimous consent of the Fathers—an unfortunate decision for a professedly infallible authority, because the Fathers, being only men, are seldom unanimous, but

differ both from the Scriptures and from one another.

This general view may be illustrated by singling out some of the most eminent of the Fathers. For example, Justin Martyr (103–167), so well known by his able ‘Apologies’ for Christianity. He had advanced from unsatisfying philosophies to find what he needed in Christianity, and there are not wanting passages in his works in which he insists on the unique claims of the Scriptures; yet Neander says of him, ‘He is the precursor of the Alexandrian church-teachers, since we recognise in him most distinctly the union of Platonism with Christianity.’ That he still retained the mantle he had worn as a pagan philosopher and ascetic, after he became a Christian, was the outward expression that the habit of mind was also retained, though we cannot doubt his continued use of philosophy was partly with a view to draw the philosophic to Christ. But his remarkable doctrine of the spermatic Word (*λόγος σπερματικός*) in its relation to the absolute Word, the Logos of St. John, must be regarded as an accommodation of teaching much to be deprecated, or as a proof that his mind had in the course of its history and development been so impressed with the genius and grandeur of the Platonic system as to be unable to divest itself of it and to receive the

Scriptures with childlike homage and simplicity. To suppose that certain philosophers had a certain measure of divine revelation, whether reflected from the religion of Moses or received immediately, and that that revelation was commingled with their own erroneous and imperfect systems; and to teach that, without knowing which philosophers were thus taught, or how much of their teaching was divine wisdom, and how much we were yet to expect from them, was indeed a misleading error of no small magnitude. And we are not surprised to find, as shown by the late Bishop Kaye in his work, 'Some Account of the Writings and Opinions of Justin Martyr,' that this eminent Father was very vague in his teaching with regard to some of the fundamental doctrines of the Gospel.

Or we may take as an example Tertullian (160-240), to whom for his learning is assigned a first place amongst the Fathers by Jerome and Vincentius Lirinensis. He was a man so sensitive and vehement that this personal element must be taken into account in weighing his testimony. His language is inflated as well as eloquent; his statements contain truth, but go beyond it to exaggeration; and the pictures he paints are coloured with the deep dyes of his own vivid imagination. He may be taken as a witness against the undue influence philosophy

exerted over Christian doctrine in his day. In his 'Præscript. Hereticor.' (pp. 204, 5) he says, 'Ipsæ denique hæreses à philosophia subornantur. Inde Æones, et formæ nescio quæ, et trinitas hominis apud Valentinum : Platonius fuerat. Inde Marcionis Deus melior de tranquillitate ; à Stoicis venerat. Et ut anima interire dicatur, ab Epicureis observatur. Et ut carnis restitutio negetur, de una omnium philosophorum schola sumitur. Et ubi materia cum Deo æquatur, Zenonis disciplina est : et ubi aliquid de igneo Deo allegatur, Heraclitus intervenit. Eadem materia apud hæreticos et philosophos voluntur, idem retractatus implicantur. Unde malum, et quare ? et unde homo, et quomodo ? et quod proxime Valentinus proposuit, unde Deus ? Scilicet de ethymesi, et ectromate. Miserum Aristotelem ! qui illis dialecticam instituit, artificem struendi et destruendi, versipellem in sententiis, coactam in conjecturis, duram in argumentis, operariam contentionum, molestam etiam sibi ipsi, omnia retractantem, ne quid omnino tractaverit. Hinc illæ fabulæ, et genealogiæ interminabiles, et questiones infructuosæ, et sermones serpentes velut cancer ; a quibus nos Apostolus refrenans, nominatim philosophiam contestatur caveri oportere, scribens ad Colossenses : Videte ne quis vos circumveniat per philosophiam, et inanem seduc-

tionem, secundum traditionem hominum, præter providentiam Spiritus Sancti.*

But, in the rebound from the extreme he condemned, he went far to the opposite extreme. He rejected the guidance of Aristotle, to become a blind follower of Montanus; and, although strong in his condemnation of the practice of Christians giving place to the ancient philosophers in the teaching of their divine religion, he found room for human traditions (though he protested against their use except in contending

* 'Finally, heresies themselves are instigated by philosophy. Thence the Æons, and I know not what "forms," and "the trinity of man," according to Valentinus: he was a Platonist. Thence the Deity (better by tranquillity) of Marcion had come from the Stoics. And that the soul is called to die is learned from the Epicureans. And that the restitution of the body should be denied is maintained by the united school of all the philosophers. And when matter is regarded as equal with God, the doctrine is Zeno's; and when anything is affirmed of a god of fire, Heraclitus comes in. The same subject is discussed among heretics and philosophers, the same retractations are involved. Whence evil is, and why? And whence man, and how? And what Valentinus proposed lately, Whence is God? Of course from a mental effort and from an abortion. Unhappy Aristotle! who has taught them dialectics, cunning in building up and pulling down, subtle in thought, contracted in conclusions, severe in argument, productive of disputes, contrary to itself, retracting everything, so that it cannot really hold to anything. Hence these fables, and endless genealogies, and unfruitful questions, and discourses crawling like a crab: the Apostle, warning us against these, expressly naming philosophy as to be avoided, writes to the Colossians, "Beware lest any one deceive you by philosophy and vain misleading, according to the tradition of men, contrary to the foreknowledge of the Holy Ghost."

with heretics); and he made a way for the reception of several serious and unscriptural errors. The extreme and daring speculative tendency of Gnosticism led the anti-rationalistic to return to a greater reverence for the Scriptures; but, unhappily, it was allowed to lead to the unscriptural Montanist error. Not content with the authority of the Bible, they sought further teachings, and for a present and impressive authority. Persons were supposed to fall into an ecstasy of divine origin, and while in it their words were held to be of the highest value. The belief in this supernatural element led to an exaggerated regard to penances and celibacy, and favoured a legal and ritualistic spirit. It invested certain persons with a supposed sanctity and authority, by which they could stand side by side with the inspired writers, or even override their divine decisions. Spiritual in its origin, and a protest against error, Montanism ended in what was formal and frivolous; and we are not surprised to find the great Tertullian, under its influence, using his powerful pen to write a treatise 'De Pallio,' in anticipation of the learned treatises on vestments by some great divines of our own day. This brief reference to this Father will show that he failed to become a safe and true leader of theological thought because he did not

adhere to the inductive use of the Scriptures as a sole and sufficient guide.

The same general view is illustrated and confirmed by the history of Origen (185–253), whose early intelligence and spirit of enquiry, perseverance and attainments in learning, magnanimous but excessive self-denial, and readiness for martyrdom awaken in us the deepest interest. He belonged to the Alexandrian school, and brought to the study of Christianity a Platonic intellectualism which was fatal to him as a Bible interpreter and divine. Filled with the thought of the greatness of the ancient philosophers, and the surpassing excellence of their elaborate systems, he was not prepared to lay them aside, and with simplicity learn of divine revelation. The Scriptures have a practical spiritual aim for every man. They are for the common people. But Origen wished to find in them the metaphysical subtleties of his ancient masters. To accomplish this, he was led to adopt and apply with unparalleled licence the allegorical method, by which the Scriptures can be made to speak in accordance with the fancies and favourite theories of the interpreter, and are robbed at once of their meaning and authority. As the natural result of his erroneous method, he was led to hold several serious errors in doctrine—

e.g., that the spirits of men have existed from eternity, that there is a purgatory even for the godly. And he fell into the Pelagian heresy. He wrote commentaries on the Scriptures, and left monuments of his knowledge of the several texts and versions, and he gave much attention to the study of the Hebrew tongue. In him we see a striking proof that linguistic learning and exegetic skill and a pious purpose will not secure from error, if there be not a child-like inductive use of the oracles of God.

On reaching the age of the Schoolmen, we are conscious of having advanced to a period in which there is a magnificent attempt on the part of men of the greatest genius and piety to make theology a science broad in its basis, distinct in its details, and capable of defence against all comers. But we are not less conscious of the failure of this splendid effort through the use of a mistaken method. The period of the Schoolmen was the era of 'logical theology.' The method and ethics of Aristotle, diluted or exaggerated in the works of incompetent commentators, occupied the mind of the time, and, diverting it from the childlike study of the Scriptures, gave it for the true bread the stone of subtle verbal distinctions and self-evolved theories. This evil was increased and rendered permanent by the notion

of *authority* which came in with the ascendancy of the active and self-assertive spirit of the Latin clergy. The late Bishop Hampden, in his Bampton Lectures on 'The Scholastic Philosophy,' thus describes the last-mentioned element. He says at pp. 46, 7, 'What the speculator had to guard against was the appearance of proposing anything new; anything that did not admit of being traced up to some received opinion. The suspicion of originality was fatal to the reputation of the Scholastic divine. "If any man speak, let him speak as the oracles of God;" that is, according to the sense of the Scholastic age, let him speak only the words of those whom God has successively sent as the ministers and dispensers of sacred truth. If it was a point on which the Church had pronounced, that was no longer a matter of opinion. It was to be received as a sentence. To discuss it simply as an opinion was heretical. Hence the expedient of distinctions; the artifice by which an acute reason could maintain its own hypothesis consistently with the devotion due to the prescriptions of authority.' For Scholasticism did not escape new errors by its adherence to authority, but, as he says at p. 372, 'It boldly stepped beyond the bare facts of Scripture, in the assumption of theoretic conclusions from them as the

principles of its theology; and then retired upon the authority of that Scripture from which it had presumptuously departed, demanding the certainty of *fact* for the dictates of progressive, varying opinion.'

The same author, in the learned and able work referred to, shows in detail that many of the unprofitable questions that are still argued by speculative theologians had their rise in the Scholastic period—*e.g.*, that which is discussed and decided in the affirmative by Aquinas, 'Utrum Gratia ponat aliquid in Anima.' And he says at p. 200, 'To Scholasticism, indeed, though the theories of Predestination and Grace, which it taught, are of a less complex form than is commonly supposed, we may trace the origin of those idle questions with which this department of theology has been vexed—such as, whether predestination is certain; whether there is assurance of salvation; whether the number of the elect is fixed; whether all are predestined. These and similar questions incidental to the general enquiry have been naturally laid hold of by theologians, following the example of the doctors of the Middle Age, from whom they received the speculation itself. And this effect shows the evil of any speculation at all on the subject. It only marks out the lines of future disputa-

tions. If these truths are to be defined, the only legitimate mode is the laborious, historical, experimental one, formed on a comprehensive and accurate study, under the guidance of that selfsame Spirit whose ways we are exploring, of every fact of nature and Scripture, and the collection of these into a general law of the Divine procedure. But this is the work of a Christian life ; it is a process of induction which can only be carried on where there is a disposition and an activity in doing the Divine will and obeying the Divine motions. Otherwise we are but tracking the arrow through the air, or the keel of the vessel through pathless waters.'

It is the more necessary to show the defects of the Scholastic theology, because recently, under the name scientific, it has been held up to admiration. But it is capable of proof that it was not in the modern and true sense scientific. The great names of John Damascenus, Peter Lombard, and Thomas Aquinas, though appealed to, are not sufficient to justify this claim. Of the two former Fathers the author just quoted says, 'The work of Peter Lombard, which afterwards constituted the great text-book of the Scholastic theologians, and which established to that writer the title of "The Master," or "The

Master of the Sentences," was exactly such an exposition of Christian doctrine as we might have expected from that conflict between reason and authority which existed in the Latin Church. It is an elaborate compilation of passages from the writings of the eminent Latin doctors; a tissue stiff with antique embroideries, and displaying the ingenuity of the artist who has so curiously wrought the patch-work into a whole. He introduces little reasoning of his own, only enough to give a consistency to his citations, and he avoids all references to the opinions of heathen philosophers. He seems throughout on his guard against the suspicion of exercising the privilege of thinking for himself too far, endeavouring to show that he follows received opinions, rather than his own speculations. The work was probably written in imitation of a treatise of a Greek Father of the eighth century—the treatise "On the Orthodox Faith," by John, a monk of Damascus, celebrated in the Iconoclast disputes of his times, or Damascenus, as he is usually termed; a writer who sets out with the profession that he states nothing of his own, but only what the holy and wise had taught. This work had been translated into Latin, and was regarded with great deference by the Latin divines, for the very reason, pro-

bably, that it was a mere record of opinions already sanctioned by the approbation of the Church. In Lombard, however, there is little of the logical precision by which Damascenus is characterised. He is intent on displaying his authorities for the positions advanced.' It is suggestive of the power of authority in the history of dogma that the work of John of Damascus, already referred to, still maintains its reputation in the Greek Church. That its author was a stout defender of idol worship may show to the Bible student that he has little claim to be ranked as a scientific theologian. He was under the yoke of Aristotle, whose writings he often quotes.* That Peter Lombard cannot be classed as an inductive theologian may be shown from his application of Aristotle's principles to 'the Fall.' He

* To understand how far John Damascenus was under the influence of the Aristotelian method it is necessary to examine his works. No single passage can fully represent the extent of the influence, but in our investigation we noticed the following as suggestive of it:—'For every sensible body is compounded of four elements, and the bodies of animals of four fluids. It should be observed that there are four elements—earth, cold and dry; water, cold and moist; air, hot and moist; fire, hot and dry. And likewise four fluids answering to the four elements: black bile corresponds with the earth, for it is cold and dry; phlegm corresponds with water, for it is cold and moist; the blood to the air when it is hot and moist; yellow bile resembles fire, for it is hot and dry.' This passage is in the chapter *περὶ ἀνθρώπου* in his 'Accurate Delineation of the Orthodox Faith,' p. 120 of the edition published at Basle, 1548.

attributes the identity of the sinful principle in each individual of the race to the assumed impartation by Adam of a material part of himself to his descendants, which part, without external addition, has been continued to them in succession. ‘Transmisit enim Adam modicum quid de substantia sua in corpora filiorum, quando eos procreavit; id est, aliquid modicum de massa substantiæ ejus divisum est et inde formatum corpus filii, suique multiplicatione, sine rei extrinsecæ adjectione, auctum est; et de illo ita augmentato aliquid inde separatur, unde formantur posterorum corpora: et ita progreditur procreationis ordo lege propagationis, usque ad finem humani generis. Itaque diligenter ac perspicue intelligentibus patet, omnes secundum corpora in Adam fuisse per seminalem rationem, et ex eo descendisse propagationis lege.’—Pet. Lombard. Sentent., lib. ii. dist. 30.*

* ‘For Adam transmitted a certain small portion of his own substance into the bodies of his sons when he begat them; that is, a certain small portion of the material of that substance is divided, and thence the body of his son, being formed, is increased by its own multiplication, without the addition of anything from without; and from that, thus increased, something is separated, whence are formed the bodies of descendants: and thus the order of procreation advances by the law of propagation, even to the end of the human race. Thus to those understanding carefully and clearly it is plain that all were in Adam as to their bodies by a seminal relation, and descended from him by the law of propagation.’

Of his exaggerated view of the authority of the Fathers sufficient proof may be found in the following quotation, in which he declares the Holy Spirit spake by them :—‘ Ecce tribus illustrium virorum testimoniis, scilicet, Augustini, Hilarii, atque Ambrosii, in eodem concurrentibus revelatione Spiritus Sancti in eis loquentis, pie credere volentibus ostenditur,’ &c. —Lib. Sentent. i. dist. 19.

Nor can Thomas Aquinas, whom Sir James Macintosh calls ‘the moral master of Christianity for three centuries,’ be exempted from the general censure that the Scholastic period has drawn upon itself. His ‘*Summa Theologiæ*’ has been characterised as the greatest work on theological science ever attempted; and the following passage from it has been quoted to show that he was not ignorant of the inductive method :—‘ Ad primum ergo dicendum, quod in accipiendo scientiam non semper principia et elementa sunt priora, quia quandoque ex effectibus sensibilibus devenimus in cognitionem principiorum et causarum intelligibilium. Sed in complemento scientiæ semper scientia effectuum dependet ex cognitione principiorum et elementorum, quia, ut ibidem dicit philosophus, tunc opinamur nos scire, cum principia possumus in causas resolvere ’ (‘*Summa*,’ prima pars, quæstio lxxxv.

art. 8).^{*} But his work is thoroughly under the spell of Aristotle, and abounds in endless divisions and subtle refinements.[†] The Scriptures are often quoted in it, and their authority is held in the highest reverence, but the authority of the Fathers is also acknowledged, and there is a continual attempt to frame exact theories on the most difficult subjects. It is sought to make these theories consistent with themselves and safe against the attacks of adversaries, and to show that they rest on the best authority, with what success or advantage the reader may judge, in reference to such favourite topics of those times as the properties of angels, or the mysteries of the Trinity, or the origin

^{*} 'First, then, it should be said that, in acquiring science, principles and elementary knowledge are not always first; for sometimes from sensible effects we arrive at the knowledge of principles and intelligible causes. But in the completion of science, science always depends for its effect on the knowledge of principles and elements; for thus the philosopher says the same: then do we judge that we know when we are able to resolve principles into causes.'

[†] Vide his discussions of the questions 'Utrum species intelligibiles effluent in animam ab aliquibus formis separatis, and 'Utrum intellectus possit actu intelligere per species intelligibiles, quas penes se habet, non convertendo se ad phantasmata,' at pp. 153, 155, under quæst. lxxxiv., in the prima pars of his 'Summa totius Theologiæ,' edition of 1615. An example of the frivolous character of some of the almost innumerable questions discussed may be found at p. 92 of 'tertia pars,' where, in writing of the descent of the Holy Spirit on Christ at His baptism 'like a dove,' he goes minutely into the question 'Utrum illa columba, in qua apparuit Spiritus Sanctus, fuerit verum animal.'

of evil. Neander, in his 'Church History' (vol. viii. p. 242), gives as an illustration of Aquinas's subjection to the influence of Aristotle his attempt to harmonise the use of *μεγαλοψυχία* by the great Stagyrte with Christian humility and self-abasement.

In the same category it is necessary also to mention the celebrated works of Eusebius Pamphilus (264-340), the 'Præparatio Evangelica' and the 'Demonstratio Evangelica.' These works, notwithstanding their learning and value, are vitiated by the credulity of the author, and his undue regard to the Platonic philosophy. In his view the ancient philosophers had been taught by God, that they might prepare the way for Revelation. It was therefore right, and desirable in the case of those already familiar with philosophy, to advance from it to Revelation. The consequences of not throwing aside unauthorised trammels, and of not applying the inductive method simply and without preconceived notions to the Scriptures, are evident in his retention of ancient errors, along with the reception of new truths. Like the works previously mentioned, these are overloaded with quotations from more ancient authors.

The effects of the Patristic and Scholastic eras are with us to this day. Our terminology

and habits of thought in theology are the echoes of the loud utterances of those times. The words 'grace,' 'predestination,' 'satisfaction,' 'perseverance,' for example, are not used in their natural sense, but have, to say the least, a penumbra from the past. The violent protests of the Reformers have not shaken us free from the bondage of former error. To fight the foes of their faith, they used their weapons, and so put honour upon their enemies' mode of warfare in the act of conquering them. Bishop Hampden, in the work already quoted, has shown this in detail. With regard to the permanent effect of the Aristotelian method, he says (lecture ii. p. 76), 'It is not with a logical philosophy as with any other system. A particular theory in metaphysics, or physics, may have its day and pass away. But a science which is an universal method—which is carried into every subject—particularly one like this, entering into the vitals of religion, and entwining itself with a parasitical fondness round the majestic body of sacred truth, cannot be dispelled altogether by any reformation. It becomes part, not only of the scientific language of a people, but the idiom in which they express their ordinary ideas. This has been eminently the case with the philosophy of Aristotle, in its transition through the schools

of the Middle Age. It is in the very air of our social life. Its legend, though worn, is not effaced from the current coin of our philosophy and our theology.'

And it would not be a difficult, though an ungrateful task, to trace the rigidity of some sectarians, their stereotyped phrases and unbending and unprogressive so-called orthodoxy, to the 'logical theology' and Tudor-like claim of 'authority' that marked the Scholastic era; while in the latitudinarian theologians of our time, on the one hand, who find in the Scriptures little more than a peg on which to hang their own self-evolved theories, and in the ritualistic, ascetic theologians, on the other, who regard as sacred the teachings and rites of the Church, and the office and person of the priest, we see amongst us in a new form the Gnosticism and Montanism that corrupted the Church during the first centuries of the Christian era.

CHAPTER VIII.

THE HAPPY RESULTS THAT WILL FOLLOW THE
GENERAL ADOPTION OF THE INDUCTIVE ME-
THOD IN CHRISTIAN ENQUIRY.

GIBBON begins a passage, in his work 'The Decline and Fall of the Roman Empire' (chap. xliv.), on the Emperor Justinian with the following words: 'It is the first care of a reformer to prevent any future reformation.' The sting of this satire is in the element of truthfulness it contains. Science has benefited immeasurably by the habit of regarding points reached as provisional, awaiting confirmation or disproof; theology has suffered by an opposite course of unwarrantable dogmatism and finality. Gibbon's words point to a danger, but are not universally true. There have been religious leaders who have modestly regarded themselves as but taking a step in the general advancement, leaving others to press on to the goal. Such a leader was the Rev. John Robinson,

M.A., who, when dismissing the English settlers forming the Christian church of which he was the pastor from the coast of Holland in 1620, as they went forth to found New England, concluded his discourse thus:—‘We are now ere long to part asunder, and the Lord knoweth whether ever he should live to see our faces again. But whether the Lord had appointed it or not, he charged us, before God and His blessed angels, to follow him no further than he followed Christ; and if God should reveal anything to us by any other instrument of His, to be as ready to receive it as ever we were to receive any truth by his ministry; for he was very confident the Lord had more truth and light yet to break forth out of His Holy Word. He took occasion also miserably to bewail the state and condition of the Reformed Churches, who were come to a period in religion, and would go no further than the instruments of their reformation. As, for example, the Lutherans: they could not be drawn to go beyond what Luther saw; for whatever part of God’s will He had further imparted and revealed to Calvin, they will rather die than embrace it. And so also, saith he, you see the Calvinists: they stick where he left them, a misery much to be lamented; for though they were precious shining lights in their times, yet God had not

revealed His whole will to them, and were they now living, saith he, they would be as ready and willing to embrace further light as that they had received. Here also (says the recorder) he put us in mind of our Church Covenant, at least that part of it whereby we promise and covenant with God and one with another to receive whatsoever light or truth shall be made known to us from His written Word; but withal exhorted us to take heed what we received for truth, and well to examine and compare it, and weigh it with other Scriptures of truth, before we received it. For, saith he, it is not possible the Christian world should come so lately out of such thick antichristian darkness, and that full perfection of knowledge should break forth at once.' Such words are worthy of frequent perusal, and the more so, because they are in contrast both in spirit and in principle with those of many of the chiefs of men.

By a singular paradox, feebleness and strength alike favour finality. Strength, proud of the point reached, and wishing to see the immediate manifestation and fruit of its attainment, magnifies what is known and warns against future discoveries that would lessen the *éclat* of present knowledge. And feebleness, disliking effort and dreading change, protests against all no-

velty and innovation. There is always a great conservative element in society, which is not without its use, like the ballast in the ship; but at best it must take the humble form of dull inertia and consent to be as the drag on the wheel of progress. To this class belong the timid and the indolent, who will be glad to get others to think for them, and who will take their politics from the particular newspaper they are in the habit of reading, and their religion from the established system of the country in which they are born, or from that of the sect amongst whom they have been brought up. Such persons hold themselves to be the great defenders of truth. But they overlook the fact that their sameness, of which they boast, may be partly the sameness of error, and that they have closed their mind against what is to be learned in refusing to admit anything new. Moreover, those very opinions they hold on the authority of their ancestors, and affirm so strongly to their descendants, were once looked upon with suspicion as the fancies of the few. Again and again in the history of opinion this process has been repeated. What one age has regarded as rationalism another has with its loudest ecclesiastical voice declared to be orthodox and authoritative. And we believe that some such change in the history of belief is reasonable; only in

itself such a history carries the condemnation of finality.

The same disastrous unwillingness to advance beyond a fixed point in knowledge or belief, and which we believe would be counteracted by the honest use of the inductive method, has been developed by the dominance of great names and imposing systems, and especially by the fixing of a theological creed which has been rigidly insisted on, so that the believer received it in its scientific form and its literal exactness, or at least professed to do so, and the divergent mind was exposed to penalties for its hesitation or partial denial of the authorised Shibboleth. Considering the vast field of theology, and the errors on the right hand and the left to be guarded and protested against, it was not remarkable that the Christian Church should use its utmost efforts by Councils or otherwise to mark off something as certain where so much was in dispute, and to entrench itself in a small and well-walled citadel when there were so many adversaries and such frequent assaults. But what is so much to be regretted is that it should have been assumed that the whole land was possessed, and that so many should have been pursued and persecuted who went beyond the first narrow boundaries to make new conquests for truth and righteousness. Contending

motives have agreed in favouring repression and persecution. The advocates of a system have trembled for the consequences if that system were changed or abandoned. And the proud and ambitious have seen that their credit, fortune, and influence were involved in the upholding of the dogma they have taught. And who is there who has not been to some extent betrayed into the fallacy of regarding the system he believes as the truth universally, and insisting upon its indisputable claims? And yet all the while those we are seeking to coerce to our convictions hold as strongly other and even contradictory views. As the friends of what we hold to be true, we ought to urge its claims; but we become the enemies of truth so soon as, denying other truth, we seek to stay enquiry and to compel and coerce those who believe otherwise than we do. The love of power and the love of association have both favoured finality and repression. Truth is no respecter of persons. As we reach greater heights we must think less of those we have left below. The founder of a system, delighting in present power and fearing to be superseded, pleads for himself and his own name, and says to science, 'Thus far shalt thou go, and no farther;' but the great sea of knowledge rolls on, and his very name is erased from the sands of time.

It is to be deeply regretted that the sacred authority of the Holy Spirit has been claimed for systems that violated many of His teachings, and that repression and persecution have been practised professedly in the service of Him who condemns cruelty and coercion, but commands and countenances the honest prayerful search of the individual mind. The inductive method is entirely opposed to that finality which, having arisen in a commendable desire for certainty, has ended in an idolatrous worship of systems and men. It is based on the conviction that the truth of God has a real existence, quite independent of us, or of the point we have reached in the history of discovery. And this conviction when carried on to its just consequences, is absolutely contradictory to the idea of finality. It involves that those who have proceeded farthest in the paths of the wisdom of the Infinite have only set out in their unending journey. And it gives room for what the history of the Divine dispensations also witnesses for—progressive theology. Macaulay, to whom we look for brilliant passages of history rather than for profound views of theology, has endeavoured to show that theology could not possibly be progressive. But a broad and careful contemplation of nature and Scripture will show that in each great elements remain unchanged, while during long periods

there are changes of manifestation in each, and that by our progress in discovery even the unchangeable elements of each have their history of progress *to us*. If we consider the development of the one design of creation from the time of our first parents till now, and the outworking of the one plan of redemption during the same period, we must acknowledge that the preponderance of progress in manifestation is on the side of redemption ; though, looking from man's point of view, he has *discovered* most in nature. In a treatise entitled ' Our Dispensation ' I have shown that, so far from being beyond the period in which theological progress is possible, this is the very era when, taught by past experience, freed from former trammels, and honoured to live in the crowning dispensation of the Holy Spirit, we may arrive at a breadth and correctness of view that was before unattainable, and may successfully apply the truths of our holy religion to the solution of the social, political, and ecclesiastical questions of the day.

The following passage from Bishop Butler's ' Analogy of Religion ' (part ii. chap. iii.) is confirmatory of our general view. He writes, ' And, as it is owned, the whole scheme of Scripture is not yet understood, so if it ever comes to be understood before the restitution of all things, and without miraculous inter-

positions, it must be in the same way as natural knowledge is come at; by the continuance and progress of learning and of liberty, and by particular persons attending to, comparing, and pursuing, intimations scattered up and down in it which are overlooked and disregarded by the generality of the world. For this is the way in which all improvements are made; by thoughtful men tracing on obscure hints, as it were, dropped us by nature accidentally, or which seem to come into our minds by chance. Nor is it at all incredible that a book which has been so long in the possession of mankind should contain many truths as yet undiscovered. For all the same phenomena, and the same faculties of investigation, from which such great discoveries in natural knowledge have been made in the present and last age were equally in the possession of mankind several thousand years before. And possibly it might be intended that events, as they come to pass, should open and ascertain the meaning of several parts of Scripture.' And he proceeds to show that several objections that lie against this plan of gradual discovery lie equally against what we know for certain to be God's plan of operation in nature.

Let it be fully recognised that theology, like other branches of knowledge, is, from man's

point of view, progressive, and at the same time the ancient fetters of prejudice will be broken off; devout minds, emancipated from their former thralldom, will advance in the path of discovery, and thus benefit both themselves and their species. The theological mind has been enfeebled and dwarfed by its despair of self-help and its habit of leaning on the supposedly gigantic minds of the past. In its homage for them, it has refrained from calling in question their decisions, or from presuming to extend their researches. But the general application of the inductive method would bring in so strong a sense of the responsibility of each individual to enquire for himself, and so well-founded a hope of adding to the common stock of knowledge, that men would be seen rising to their moral manhood in the work of Christian enquiry, and throwing aside the childish leading-strings by which they were before supported and led. Not unimportant will it be seen to be to revert to the true method when it is acknowledged that, through the pursuit of a different course, millions of minds in many ages have been held in injurious bondage, and the progress of truth itself has been stayed.

Society is made up of two classes—those who pay homage to systems and authorities, and those who distrust them and believe they have

opposed the interests of truth and interfered with the prerogative of private judgment. We claim the suffrages of both classes for the method we are recommending. The advocate of systems will never admit that he is contending for a system for its own sake. He will claim for it that it is true. He fears to be left to his own investigations, and is reassured when he considers the form and elaboration of the system he receives, and its antiquity and the authorities that have supported it. We will urge upon such an one that, if the system thus commended is really true, it has nothing to fear from the application to it of the test of the true method, but will thereby receive confirmation. And to those who stand in doubt of systems, ancient schools, and authorities, we would suggest that they will find in the inductive method a mode of enquiry that will commend itself, and that is the property and responsibility of each individual enquirer. And we will add that in the honest application of this method there will be found a safeguard against the evils that may follow the revulsion from untrue and intolerant systems. For without such a method it is possible that, in breaking away from established creeds, the mind may run to the opposite extreme of self-willed assertion and dogmatism: the lessons of nature and the teachings of revelation

may alike be disregarded, and the man become his own rule and end and God, a Pyrrhonist in the material world, and an atheist in religion.

Another advantage has been already referred to in a former chapter, the inexpressible peace and satisfaction to be derived from the consciousness that we have found a true anchorage, that we are using a method in harmony with our nature, approved of by our Creator, and one that He will crown in its exercise with the rewards of wisdom and truth. However remarkable or valuable may be the contributions of any author or artist to literature, science, or art, the thoughtful optimist finds himself impelled, in reviewing his life and works, to ask, 'What was the method underlying all this? Was there no conscious foundation upon which all rested? Or was the entire life pyramidal—part fitting to part, and the whole resting on a broad basis and towering to a lofty apex?' And only where the life is based on principle and has a noble plan do we give the highest praise. In our view, the honest application of the inductive method would lay the foundation and rear the superstructure of such a life. God's facts in science and Scripture would be looked at with clear vision, and the holy beams of His revelation would fall on the willing soul without being discoloured, darkened, or

deflected; and the peace of that soul would pass understanding, in the certainty that it possessed and practised the true, the God-approved, and the eternal.

And, paradoxical though it may appear, the free exercise of individual thought might be expected to lead to more harmony of opinion, and a more general reception of the common truth, than the assertion of authority and the coerced profession of creeds have ever been able to produce. In many minds the use of force awakens antagonism, and in many more it produces suspicion; while, on the other hand, the appeal to reason and the statement of the way by which we reached conviction arouse no opposition, but invite to agreement with us, with the best probability of success. When Truth wields any weapons but her own, it leads to the suspicion that her own are insufficient, and that, faithless to her very name, she is relying upon false helpers; but when she bears only her own appropriate arms, the arguments of reason and the appeals of affection, she gains the confidence of all, disarms suspicion, silences her foes, and increases and rallies her multiplying friends.

To religion itself, and especially the Christian religion, the inductive method may render the highest service. It may be recognised as the

Happy Results.



common bond between science and Scripture, being not only the method necessary for enquiry in each department, but, as we have shown, that which science must learn from Scripture: the philosopher bending with the unlettered penitent at the foot of the cross of Christ, to receive, not only a common salvation, but also to learn there, as he can nowhere else, the method and spirit that ought to characterise his investigations. The strong tendency of these days of material progress and scientific achievement is to almost deify the power man has acquired over nature, and at the same time to minify to the utmost the place and importance of Divine revelation. How shall this be met? Will claims of sacerdotal authority and priestly efficacy, and insistence on the dogmatic creeds of ancient Councils suffice? This has been already tried in vain. But let it be seen that the very method to whose adoption men of the world owe commercial prosperity, scientific progress, and the improvement of the arts of life is that which assures them of much they have learned from the Scriptures, and that that very method is itself drawn from the Scriptures, and they may be expected to withdraw their disfavour and opposition to that holy book, which has too often been burdened with the opprobrium belonging to systems that provoked hostility, and to

Churches that practised cruel persecution. The paths of science, that have sometimes led from religion, will then lead to it, and the affecting words uttered of the ancient world, 'He was in the world, and the world was made by Him, but the world knew Him not,' will no longer be applicable in a better and wiser time.

The question of the relation of science and Scripture has often been discussed on very narrow grounds. Some writers have endeavoured to obviate difficulties by affirming, what is opposed alike to our experience and instincts, that the two subjects move in different spheres, and that we ought not to seek their harmony.*

* On this point the Duke of Argyll, in his work 'The Reign of Law,' at p. 58 (fifth edition, 1868), well says, 'The instinct which impels us to seek for harmony in the truths of science and the truths of religion is a higher instinct and a truer one than the disposition which leads us to evade the difficulty by pretending that there is no relation between them; for, after all, it is a pretence and nothing more. No man who thoroughly accepts a principle in the philosophy of nature which he feels to be inconsistent with a doctrine of religion can help having his belief in that doctrine shaken and undermined. We may believe, and we must believe, both in nature and religion, many things which we cannot understand; but we cannot really believe two propositions which are felt to be contradictory. It helps us nothing in such a difficulty to say that the one proposition belongs to Reason, and the other proposition belongs to Faith. The endeavour to reconcile them is a necessity of the mind. We are right in thinking that if they are both indeed true they can be reconciled, and if they really are fundamentally opposed they cannot both be true. That is to say, there must be some error in our manner of conception in one or in the other, or in both.'

Others have sought only to remove what seemed great difficulties in the way of that harmony. In the interests of religion, they have laboured to show that particular discoveries in nature did not contradict statements in the Scriptures. But it will be seen that this treatise aims to show that the subject is capable of a much broader treatment. If one seeming discrepancy is removed, others may arise; but if it be shown, as we have attempted to make it plain, that the underlying method is the same in both science and Scripture, then they may both be received from the same Divine hand. It will be generally admitted that religion owes much to science. Science cultivates and elevates the powers we use in the investigation of religious truth, accustoms us to accurate and patient enquiry, and supplies us with vast and imposing objects of observation, that assist us in forming conceptions of our God and of His works in providence and redemption.* This treatise has shown what science owes to religion in respect to both the method and spirit of true enquiry. This we hold to be a vantage-ground hitherto almost entirely neglected, but from which the

* Dr. Whewell, in his 'Bridgewater Treatise,' entitled 'Astronomy and General Physics considered with reference to Natural Theology' (1833), has given some illustrations of this statement, and confirmed this view.

claims of revelation may be successfully urged upon the scientific student of nature.

A collateral advantage will be that eminent religious leaders will no longer look coldly on science when it is recognised that the facts of nature and the teachings of revelation are alike parts of His ways who has bestowed both on man, and linked them together by a common method and common principles.* Science will not be despised nor neglected when it is recognised that theology is the queen of the sciences. From the earliest ages the narrow advocates of a religion broad as the truth of God have had unworthy fears lest the enquiries of the scientific should bring to light facts averse to their traditions or dogmas. And mystic divines have looked with indifference upon the slow processes of enquiry, believing

* The late Cardinal Wiseman, in the first lecture of his 'Twelve Lectures on the Connexion between Science and Revealed Religion' (1836), expresses his regret that 'for ages it has been considered, by many, useless, and almost profane, to attempt any marriage between theology and other sciences.' And after enlarging on that point he adds, 'Reflections such as these have led me to the attempt whereupon I enter to-day; the attempt, that is, to bring theology somehow into the circle of the other sciences, by showing how beautifully it is illustrated, supported, and adorned by them all.' The use of the word *somehow* suggests the sense he had of the difficulty of pointing out the true method of union. And although his very learned work contains much that is admirable on Ethnography, Archæology, and kindred subjects, yet he disappoints the reader by not discussing the *principle* suggested by the title.

themselves capable of supernaturally rising at a leap to far higher and better knowledge. So Eusebius says, 'It is not through ignorance of the things admired by them, but through contempt of their useless labours, that we think little of these matters, turning our souls to the exercise of better things.'

But it is time that divines and men of science should be heartily at one. The man of science will readily acknowledge that religious zeal has often animated the student of nature, that in the dark ages knowledge found a refuge as well as a place of concealment in the cell of the monk, that in ages too dormant for discovery religious men taught and commented on the great scientific works of the ancients, that some of the greatest names in the scientific world have been those of divines, and that the Bible itself, without being a book of science, has done much to teach its true method, and to illustrate and to inspire its true spirit. And it is time that Christian leaders on their part cease from taking a hostile position in relation to men of science. They can honestly welcome them as co-workers in the same field, and for the same great Master. And, without derogating from the special place and honour of Divine Revelation, they can readily admit that, along with the fulfilment of its own useful

mission, science has supplied religion with apt illustrations, and given her fresh and important evidences, has rendered her more accurate in the application of the common method, and especially has supplied her with amazing facts from nature, by which her thought of life and God has been broadened, and her worship has been assisted, purified, and elevated.

But it may be asked whether, along with the advantages of the method recommended, there is not the great disadvantage of sacrificing Christian faith. We reply that true induction is highest faith. For one case in which man's rebellion against God takes the form of gross sin there are many in which it appears in willing ignorance, the refusal to search the Scriptures, the unwillingness to lay aside 'idols,' the readiness to allow 'the god of this world to blind the eyes of them which believe not, lest the light of the glorious Gospel of Christ, who is the image of God, should shine unto them.' Dr. Arnold said, 'What I most crave to see, and what still seems to me no impossible dream, is enquiry and belief going together.' The desire of that earnestly Christian mind, as thus expressed, suggests that there is no necessary antagonism between enquiry and faith, but that they should be linked together.*

* Bishop Berkeley truly said, 'The objections made to faith

The inductive enquirer, in studying Scripture, puts faith in his faculties as God's work, and faith in the Scriptures as God's revelation. To deny these, and to act as if it were necessary to grasp, as with the last effort of despair, the mere straw human invention may have pronounced orthodox in our country and time, is to sink into utter and hopeless unbelief, and to teach by our conduct that nothing is reliable, and that we are in a hopeless condition of moral chaos, where mind and heart are without the enjoyment of a settled rest, or the security of a solid foundation upon which to build. Every act of faith, whether it be trust in a person or the spiritual reception of doctrine, includes the due attention to the object of faith, the removal from the mind of adverse influences, the full use of the powers in preparation for the act of faith and in the act itself, and chiefly that act, as it has in it an element of spontaneity, based it is true on evidence, but venturing beyond the point that element would compel others to reach. A man in an enemy's country may seek and find a frail bridge crossing the stream that divides him from his own land. If he had been careless or in despair he might not have found it. Having

are by no means an effect of knowledge, but proceed rather from an ignorance of what knowledge is.'

found it, he may be uncertain whether it would bear him safely over, or he may yield to those who persuade him it is insecure, or that he need not flee by it. His faith will not be consummated when he believes it will bear him. It is only complete when he ventures his life upon it, and so goes safely over. And, applying the illustration to religion, would not the whole series of acts be inductive in their character—not, it is true, excluding, but including, the work of God in the soul; not resting in the intellect, but rising to the induction of the heart; not finding general truths merely, but finding in the Scriptures what, as Coleridge expresses it, ‘finds’ us? The Bible declares of itself that it was ‘written that men might believe that Jesus was the Christ, and that, believing, they might have life through His name.’ Christ says of men, ‘But ye will not come unto Me, that ye might have life.’ The teachings of nature and the statements of revelation are broadly before all. Some have vision in one domain, and not in the other; some in both, some in neither. The true enquirer comes, sees, believes, lives, bears fruit, whether in science or in Scripture. In both faith in God-given faculties, faith in God as present in all things, and forming and sustaining all, faith in His revelations of Himself,

and faith alone, saves from mistake and failure, and brings fulness of fruit and blessing. The philosopher gazes upon the open page of nature, and he reads for example the law of gravitation. Has he descended thousands of miles into the earth to try it there, or investigated the remotest regions of the stellar world to test it there? No: he was not able; the former was always impossible, and when gravitation was discovered the latter was not achieved; yet he believes the result of his induction, and his faith saves him from error, and henceforth his mind moves in harmony with the universe. The Christian enquirer reads the New Testament, or muses at Calvary. Are there no heights and depths of the great theme to which he cannot reach? There are many, but, as he reads and contemplates, he feels that although he cannot fully learn the 'breadth, and length, and depth, and height of Christ's love that passeth knowledge,' yet that it is the gravitating power of the spiritual world to which all things are drawn, around which all move harmoniously. The love of God in Christ constrains him; he believes and lives. Thus induction is not opposed to faith, but is a part of it, and Christian faith may be regarded as the highest spiritual induction. And, on the other hand, the successful scientific enquirer often stands indebted to faith in God.

To use the words of an eminent living student of nature, 'Newton, Harvey, Cuvier, and Hunter, not to mention other great discoverers of scientific truth, were led to make their discoveries by a profound sense of God's wisdom. An assurance of the perfection and wisdom of God's works led them to a right interpretation of facts, which to others seemed inexplicable or unmeaning.'

Before concluding, it is necessary to answer an enquiry which in these days, when the claims of Comte are being urged with much ability, and when social science is taking an important place, may probably arise in the mind of the reader—the question whether the inductive method, as we have explained it, can fulfil the requirements of a true sociology. It might be supposed that the inductive method can only lay the foundation, but is unequal to the erection of the superstructure. Monsieur Littré, in his work '*Auguste Comte et la Philosophie positive*' (1863), claims for his great master that he shows a superiority to Descartes, in making his system include great social questions, while that philosopher, in his work on '*Method*,' disclaims the intention of embracing them. He says, '*M. Comte combina en lui le savant aux notions particulières, et le penseur aux notions générales.*'

Aussi, tandis que la philosophie des sciences l'occupe sans relâche et se change, entre ses mains, par une sublime transformation en la philosophie même, il saisit le lien qui, dans la civilisation, unit l'état religieux et politique à l'état scientifique ou positif; il comprend que le régime théologique et métaphysique des sociétés touche à sa fin, et il est le premier à prêcher parmi elles le régime positif et à l'introniser. Ainsi associer les plus hautes spéculations scientifiques aux plus hautes spéculations sociales fut l'entretien constant de son esprit comme ce fut la gloire de sa vie.* And recently an admirer of Comte has gone so far as to affirm that not since the days of Aquinas has any Christian author attempted to show the adaptation of Christianity to grapple with the great problems that the Positive philosophy has solved,

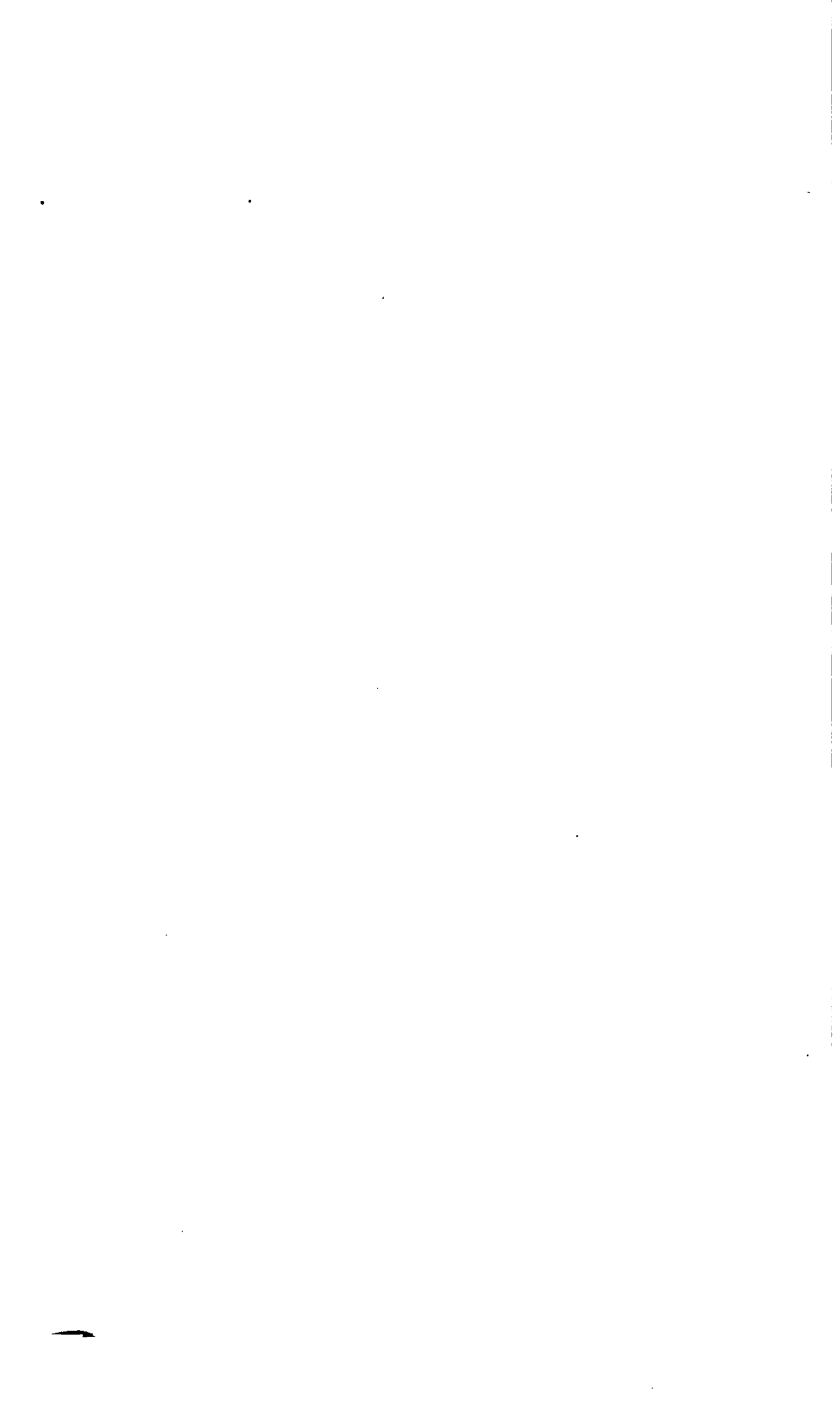
* 'M. Comte combines in himself the scholar in respect to particular notions, and the thinker in relation to general notions. So that whilst the philosophy of the sciences occupies him without intermission, and becomes changed in his hands by a sublime transformation into philosophy itself, he knows the link that in civilisation unites the religious and political state to the scientific or positive state; he understands that the theological and metaphysical *régime* of societies is approaching its end, and he is the first to preach among them the Positive *régime*, and to enthrone it. To associate thus the highest scientific theories with the highest social theories was the constant occupation of his mind, as it was the glory of his life.'

and, in fact, that the attempt is now given up by Christian advocates.

In reply to these statements, we acknowledge the grand breadth of Comte's system, and the force of the genius that evolved and expounded it. We admit also that Christianity and Positivism are at one in laying aside prejudices and superstitions, and in seeking in the individual, or in society, or in relation to any other object of enquiry, fixed laws. But we deny that Positivism has given the grounds of a true sociology;* and we affirm that Christianity, so far from giving up this great undertaking, is every day approximating more nearly to its solution, possessing as it does the perfect key to it. Positivism cannot go beyond the claims of law, or the authority and advantage of order. It may depict and applaud a splendid system, but where is the prophet to fill its highest seat? Even Comte himself is insufficient. But in Christianity we find the first germs, and also the maturest fruits, of all reformations. In Christ we find at once the perfect man and perfected humanity, the

* In the preface to his work, 'The Catechism of Positivism' (1852), Comte says, 'We come forward to constitute, as far as practicable, a real sociocracy; one which shall be able to combine wisely, in furtherance of the common regeneration, all the powers of man, each of course brought to bear according to its own nature.'

principles that underlie the life of the individual, the family, and the State, and we find these nowhere else. In Him science, philosophy, and religion are perfectly combined. And while He teaches and exemplifies the principles of life in all its departments, He, and He alone, makes sufficient the motives within that can sustain us in carrying out those principles to their greatest and most lasting results. The religion that finds one of its most beautiful expressions in the parable of the 'Good Samaritan' is the religion that leads on to a time when, by the progress of civilisation and the diffusion of moral principle, violence on the highway will be unknown, and when for a wounded man to lie neglected on the road while brother men are passing will be unheard of, and when human fear and suffering will be reduced to an almost inappreciable minimum. And it will be then fully seen that the inductive method, which found its root-principles in Christ, is equal to the grandest generalisations of an advanced sociology, as it has shown itself able to meet the first necessities of the individual man, and that, in fact, the principles it employs in both cases are the same.



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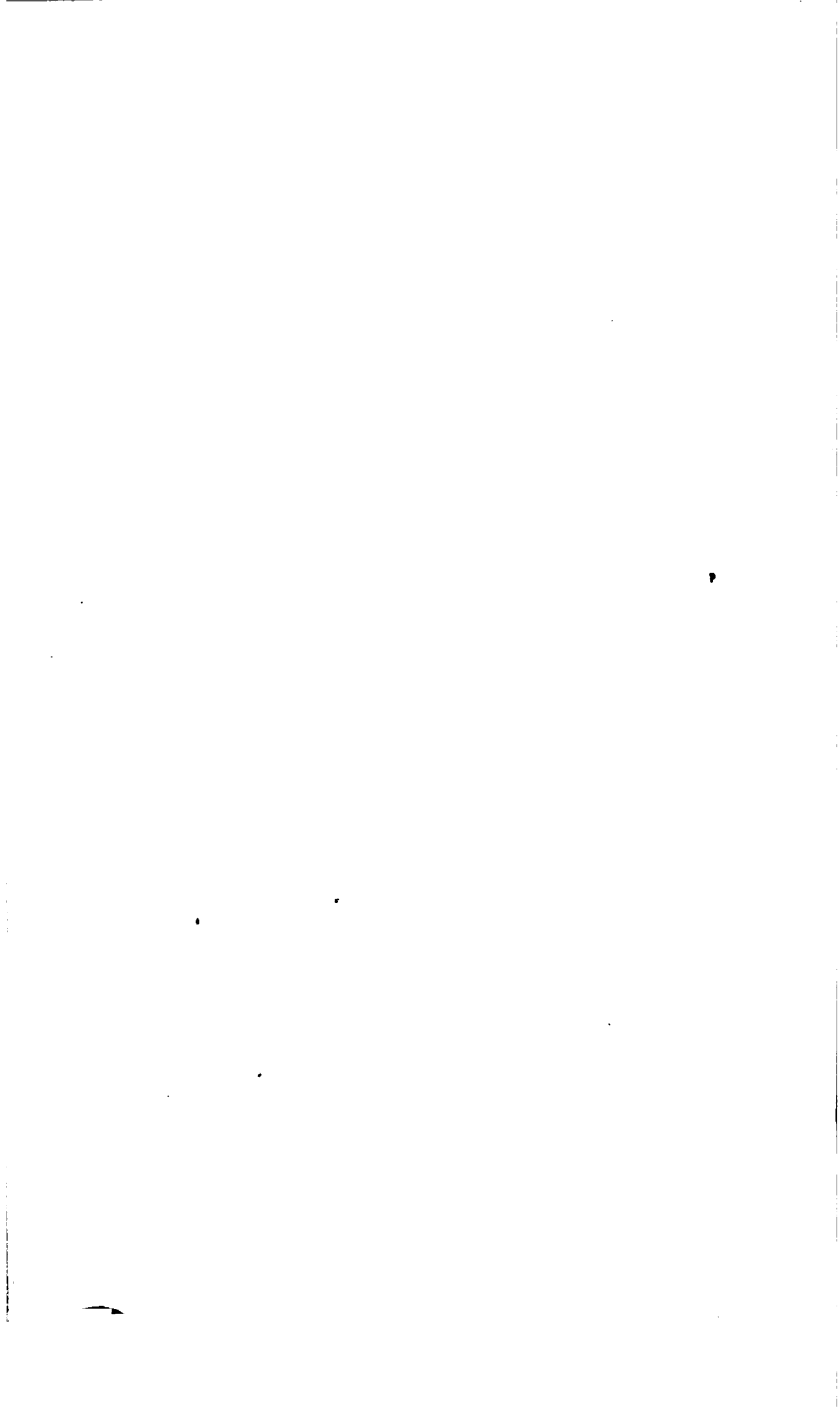
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